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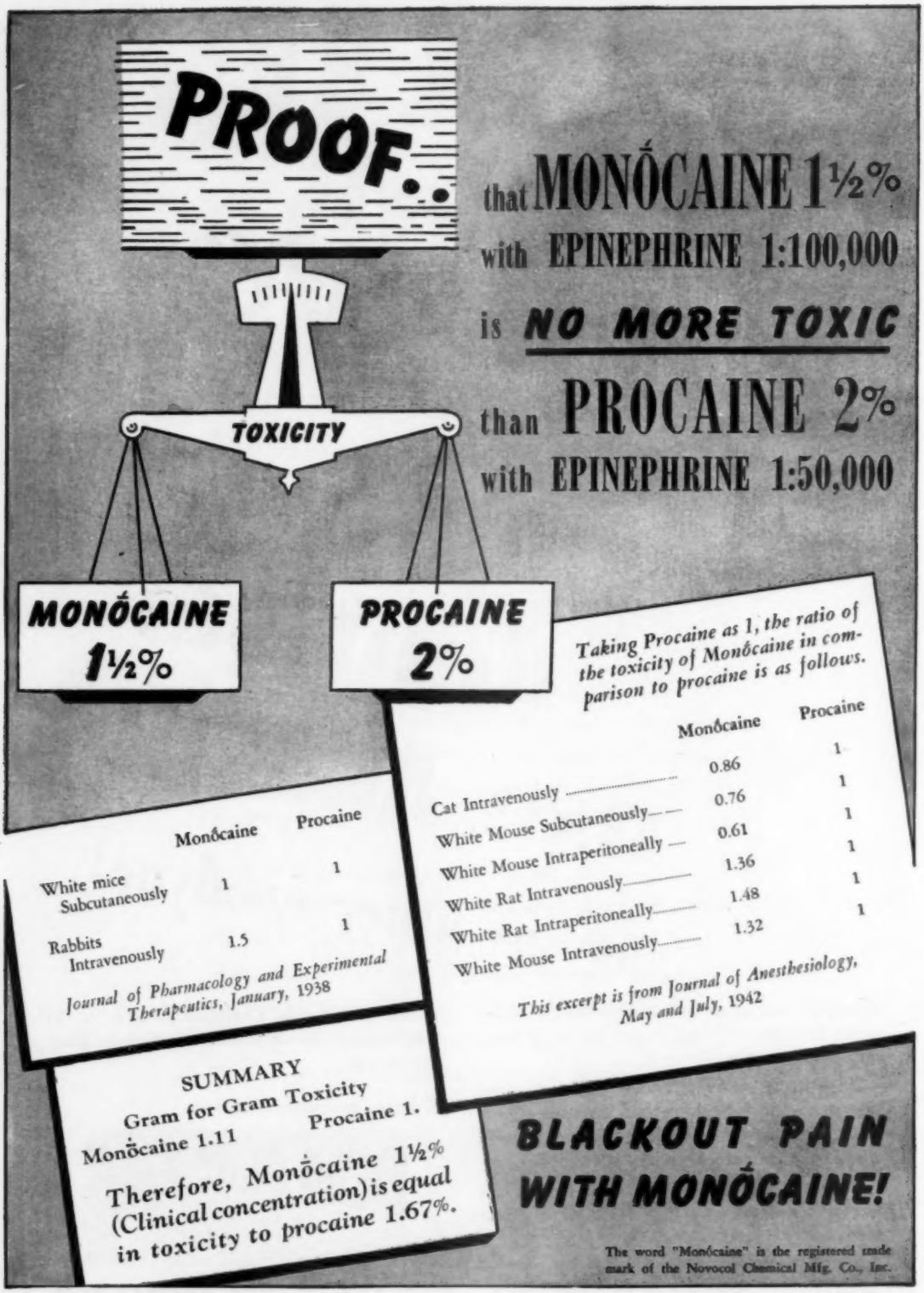
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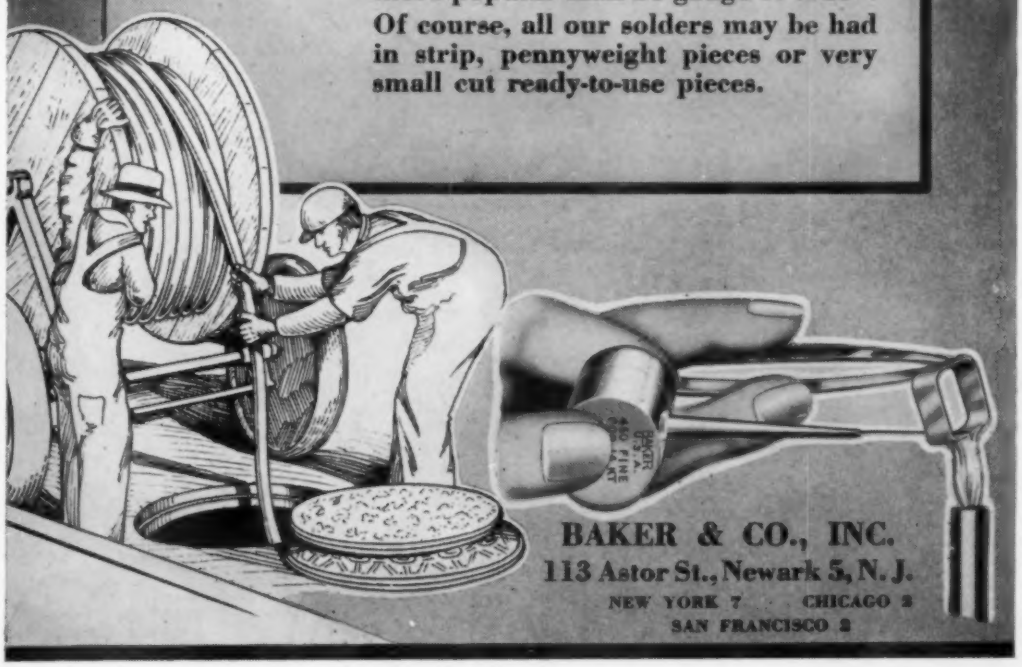

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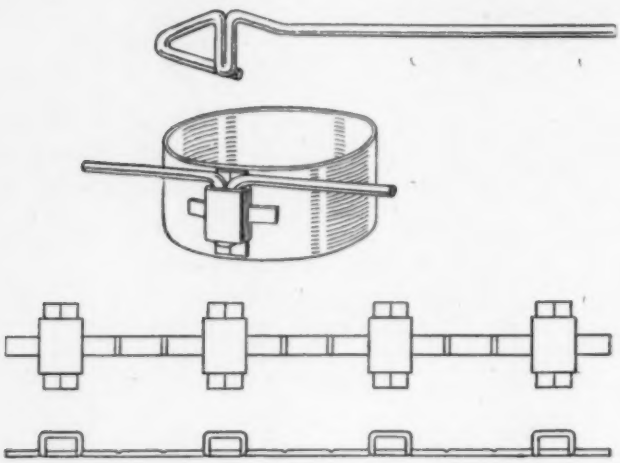

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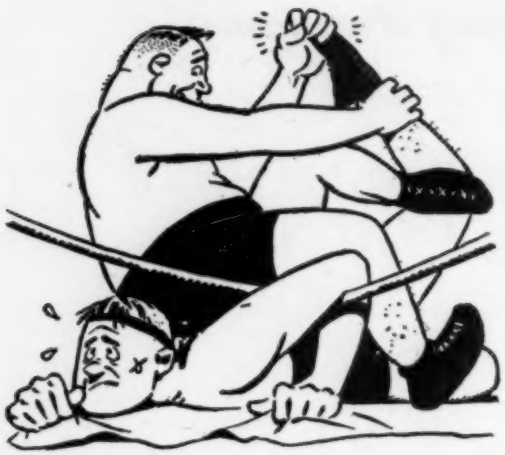

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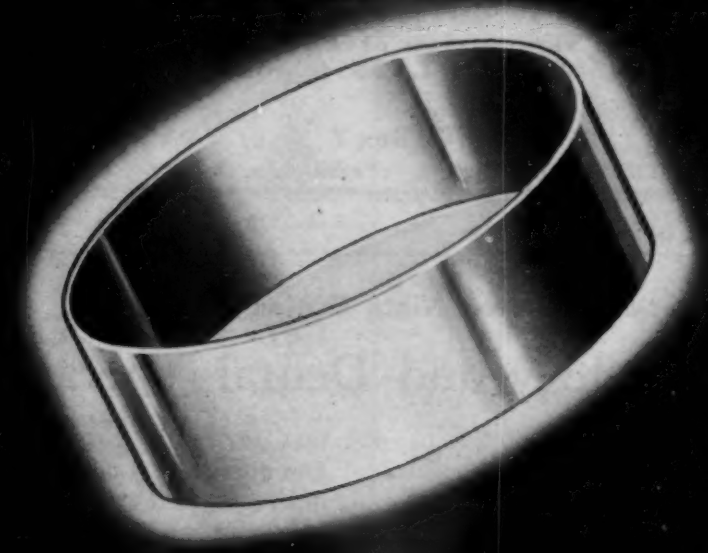

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VOL. 31 MARCH, 1945 NO. 3

Original Articles

PROBLEMS IN TREATMENT, FROM A CLINICAL VIEWPOINT

ROBERT H. W. STRANG, M.D., D.D.S., BRIDGEPORT, CONN.

FOR the past ten years it has been my privilege to come in rather close contact with a great many orthodontists who were so dissatisfied with the quality and stability of their results as to have about reached the conclusion that the worry, anxiety, and uncertainty associated with the practice of orthodontics was not worth the effort or remuneration. Hence, if there was nothing better to be found than that which they had knowledge of, they were ready to give up and go back to the general practice of dentistry.

The thought came to me that it would be of practical interest to analyze some of the problems that required ironing out in order that these men could be sent away with a new and hopeful outlook on their special field. Perhaps, in so doing, some help may be offered to members of this group.

In studying their problems, the most universal error that was in evidence was an absence of definite procedure in case analysis prior to treatment. It is my belief and contention that no orthodontist should ever begin corrective efforts for any case until he has not only made a thorough study of the malocclusion but has recorded, *in written form,* the tooth movements that are indicated and the appliance manipulation, in consecutive steps, whereby these corrective measures are to be performed.

I lay a great deal of stress upon the words "in written form," because it is a quite different task to study a case and *mentally* decide what is to be accomplished and how it is to be carried out, than to place definite and concrete data, covering all essential operative details, on a record sheet. In the latter process, the operator must not only force himself into a precise and final decision, but that record will remain as evidence of wisdom or error and also as a source

Read before the Sixteenth Annual Meeting of the Great Lakes Society of Orthodontists, Oct. 23, 1944.

The illustrations in this article are reprinted, with permission, from Strang: A Textbook of Orthodontia, ed. 2, Lea & Febiger.

of reference throughout the entire period of treatment, which is an exceedingly helpful factor if his analysis has been correct. On the other hand, if a mistake has been made, it will serve as a check against future errors.

One cannot imagine an engineer who had been given the task of building a bridge simply looking over the location where the structure was to be erected and then dismissing the problem with this mental conception of the details involved. Not by any means. Every step associated with the assembling of that structure is first worked out in tangible form upon paper. So should it be in our particular field.

But, you may say, that takes time and I have not the available hours; I am so busy. Yes, it does take time, an hour and perhaps two hours for a complicated case. And this brings up another condition that is quite characistic of the practices of these discouraged men. They have been trying to treat far too many cases and consequently have not had the time to take proper care of any one of them. Now the intake of new patients should be balanced with the output. In a successful orthodontic practice it would seem that approximately forty to fifty new cases could be properly introduced for treatment each year. Then, if the average length of treatment, including the retention period, is three years, these forty cases should be discharged in that length of time, thus providing a place for the forty new one. This would indicate that approximately one hundred and twenty patients were being carred for at all times, eighty of these being under active care for a two-year period and forty under retention for approximately one year's duration. Under such conditions, sufficient time will be available for the necessary study and preparation of each new case.

Compare this organized practice with conditions found in many orthodontic offices. Without going to extremes, we all know that six years of active care is not unusual, and that twenty, thirty, and forty individual appointments daily are quite common in the practices of many orthodontists. The bending of a spring or the tightening of a wire is all that can be done under such conditions, and individual case study at the beginning of treatment and during its succeeding years is absolutely prohibitive. If these operators have any conscience at all, and I am thankful to say that most of them have, of course they eventually become discouraged by the overwhelming evidence offered by the absence of uniform progress toward successful termination in the cases under their care.

Now to get down to the practical application of this primary case analysis, let me quickly outline just what I believe it should consist of.

1. There must be a detailed history of each case.

2. Accurate models are to be taken, either in plaster or one of the new elastic compounds.

3. Photographs and radiograms are required.

4. Study of the patient should be particularly centered on the relationship of the teeth, especially the mandibular incisors, to the underlying body of the mandible. The facial musculature should be examined, special attention being paid to muscle tone and muscle habits as causative factors in the production of the deformity. Later these conditions will be discussed in detail for treatment procedures must take these factors into consideration and the operator must be cognizant of their existence before beginning active work.

Another important item to consider in this preliminary study of the patient is median line position in the dentures. It is surprising how little attention is paid to this particular factor. If there is inharmony between the location of the proximal space between the central incisors of the two dentures, then it should be analyzed from the viewpoint of which space, if either, is harmonious with the midsaggital plane of the head. The objective of such a study is to ascertain whether the inharmonious relationship is the result of tooth shifting or condyle displacement, an exceedingly important detail in relation to corrective measures (Figs. 1 to 4). Of course inclined plane adjustment is noted.

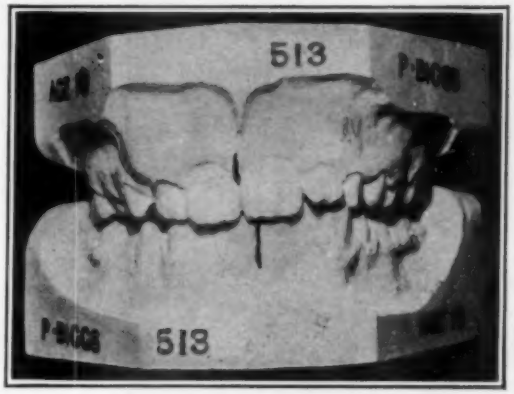

Fig. 1.

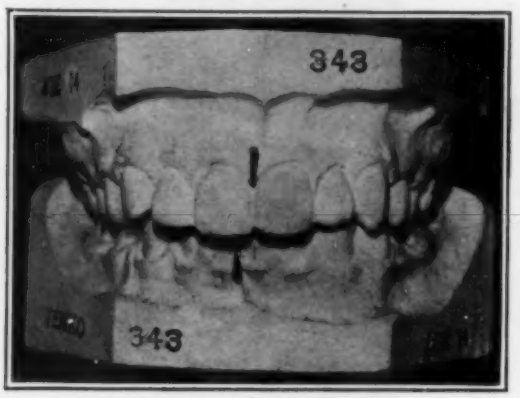

Fig. 2.

Fig. 1.—Median line inharmony due to displacement of maxillary incisors to the right.
Fig. 2.—Median line inharmony as a result of shifting of the mandibular incisors to the right.

If an excessive overbite is present, the operator should analyze this to the extent of determining whether this may or may not be due to a lack of vertical growth. If the facial harmony is marred by a shortening of the area below the nose, this is a clear indication that the molar and premolar areas of the dentures require elevation and that the excessive overbite is to be corrected by treatment in these regions. On the other hand, if the vertical growth below the nose is quite normal, then the overbite must be due to supraoccluding incisors and corrective procedures are directed toward depressing these teeth. (Figs. 5 to 8.)

Subsequent to obtaining this data from the study of the patient, an analysis of the plaster casts, radiograms, and photographs is in order.

In connection with studying the plaster casts, far too little attention is paid to the deformed dental arches as indicative of the limitation of corrective tooth movements in various directions. It must always be born in mind that teeth in malocclusion are there because their positions represent locations adjusted and fixed by balanced denture forces. Consequently, the moment that these teeth are moved from such positions, this balance of force play is disturbed, and it must be regained in some manner when treatment is completed. There are three fundamental factors to consider in this particular stage of case study. First, the amount of undergrowth manifested in the basal supporting bone; second, the muscle tone; and third, muscle habits. It seems to me that many critics of Dr. Tweed's philosophy of the importance of rearranging the incisors

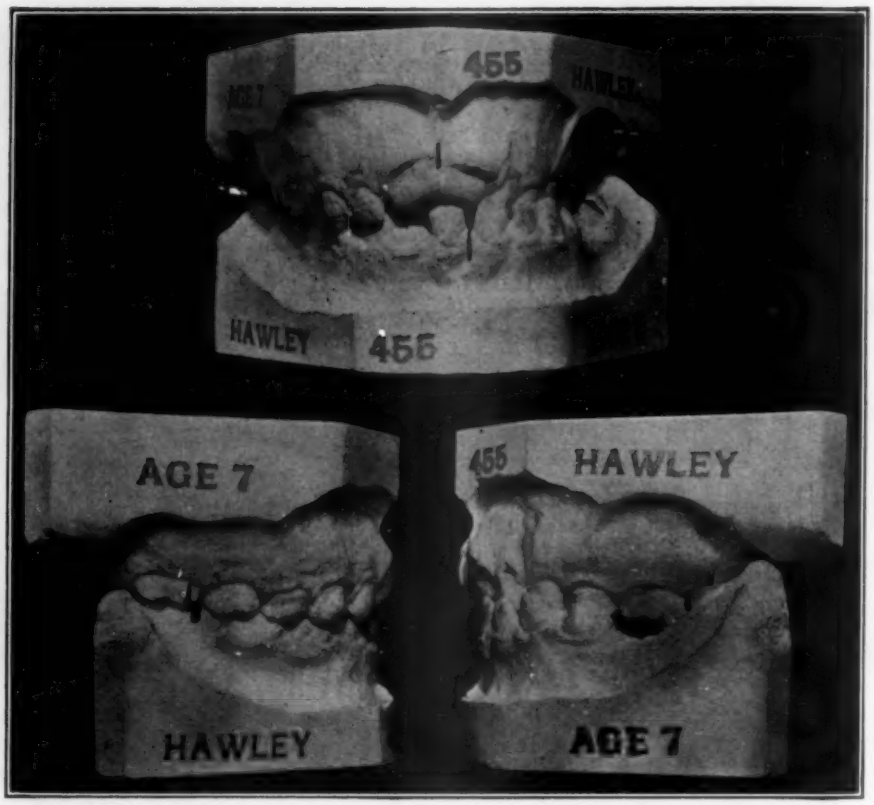

Fig. 3.—Median line inharmony resulting from a forward displacement of the right condyle of the mandible.

Fig. 4.—Facial inharmony characteristic of a forward displacement of one of the condyles of the mandible. In this case the left condyle has moved forward onto the eminence, thus throwing the chin toward the right side.

so that their roots and crowns are overlapping basal bone, at the end of treatment, have missed the basic principle involved. To my mind this is done, not so much with the idea of duplicating Nature's normal, both as to location and axial inclination of these teeth, but purely from the viewpoint of permanency of the end result of treatment.

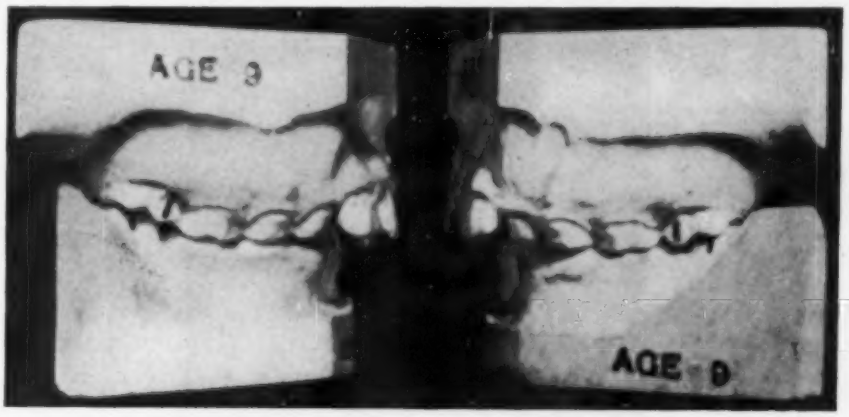

Fig. 5.—Excessive overbite due to infraclusion of the molar and deciduous molar teeth.

Fig. 6.—Photographs of patient showing lack of vertical growth indicative of infraclusion of the molar, deciduous molar, or premolar teeth.

Nothing is more important than the study of the adjustment and relationship of various structures in the normal human body but knowledge of this foundational subject must not lead us astray and be the cause of failure in the treatment of the abnormal.

Nature's ideal can only be duplicated with permanent results when all the parts that require readjustment are, in turn, of ideal specifications. Teeth in

malocclusion represent Nature's best efforts to approach the normal under the handicap of imperfect building material. The orthodontist, also, is obliged to make such variations from normal, in his attempts to improve Nature's best efforts with poor building material, as clinical experience has proved to be most practicable, when gauged by standards of functional efficiency, esthetic balance and harmony, and prolonged stabilization without mechanical support.

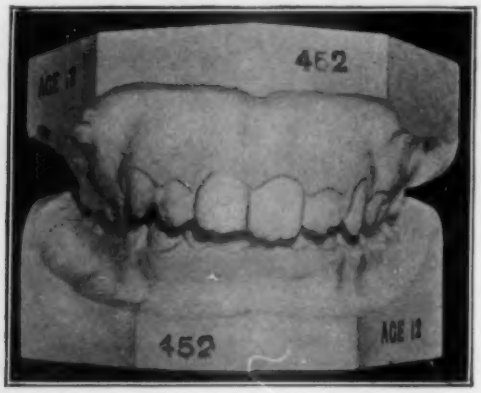

Fig. 7.—Excessive overbite due to supraclusion of the incisor teeth.

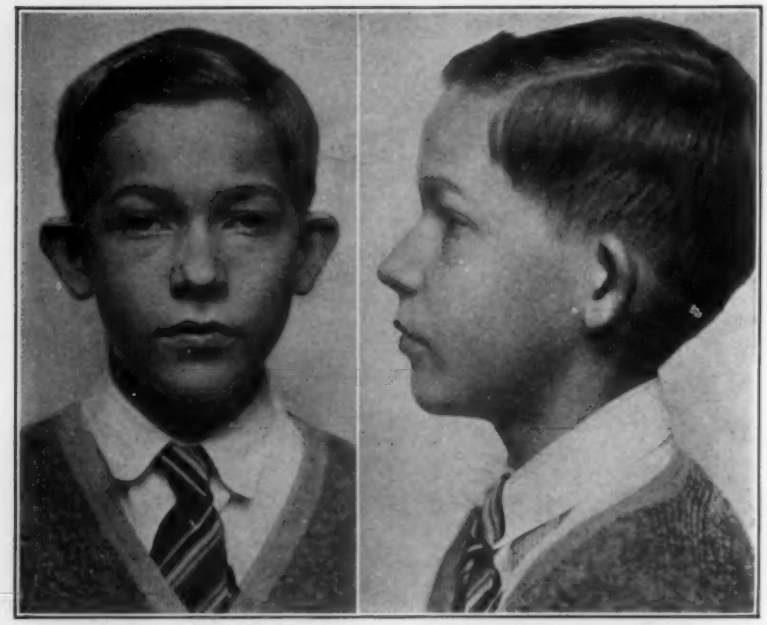

Fig. 8.—Photographs of patient whose casts are shown in Fig. 7, exhibiting no lack of vertical growth in the facial area below the nose.

For over thirty years, your essayist maintained the fight of the idealist, believing that basal bone could be functionally stimulated to renewed growth, that hypertoned muscles could be reduced to normal tone, that muscle habits could be overcome. Clinical experience and the records of research men have finally convinced me that I was in error. I have been forced to the conclusion that cases of malocclusion are evolved because teeth demand basal bone support and arrange themselves in any form they can in order to obtain such support;

that hypertoned muscles cannot be reduced to normal tone by any treatment know at the present time, and teeth, forced by mechanical means against such hypertoned muscles, cannot resist this pressure when the extraneous support is dispensed with; and, finally, that very few muscular habits can be completely overcome by muscle training so that it is quite useless to move teeth to positions where they will be subjected, in an even greater degree, to the action of these habit-ridden activators.

Consequently, I believe that it is a fallacy to expect to obtain stability in corrected cases if, in treatment, the teeth are carried off their basal bones of support or the dentures are enlarged, labially and buccally, to a much greater extent than is illustrated by the denture form of the original malocclusion. If enlargement is deemed necessary, the teeth should ultimately be adjusted in such axial positions as to be dynamically resistant to these abnormal denture forces.

In other words, if mandibular lateral incisors are displaced lingually because there is lack of room from canine to canine to accommodate them, space should not be gained for these lateral incisor teeth by moving the canines and central incisors labially but only by the distal movement of the canines. If the canines and central incisors are forced labially, they will be carried off their bony base and into positions of increased muscular pressure, both of which conditions are conducive to a return to their original position when mechanical retention is eliminated.

Therefore, if the previous study of the patient disclosed hypertense muscles or active muscular habits, and the plaster casts give every evidence of the effect of such conditions in the form of crowded incisors and forward displaced buccal segments with, perhaps, blocked-out second premolars, such dentures cannot be enlarged by labial and buccal movements of the teeth until sufficient room has been gained to accommodate all of the dental units, if the operator hopes for ultimate stability. Relapse is bound to occur because the balance of forces at play on these dentures has not only been upset but such treatment has actually increased the activity and power of these forces that originally produced the malocclusion. A return to a condition simulating the original malalignment is certain to occur. A reduction in the number of tooth units, whereby space may be obtained for the arrangement of the remaining teeth in an arch form, the dimensions of which are but little if any greater than that noted in the original deformity, is the only practical method of permanently correcting such a case.

Continuing the study of the casts, radiograms, and photographs, the following seven steps are to be covered in this process.

1. A study of the inclined plane relationship to determine the classification and to indicate the required corrective procedures.

2. A study of the axial inclination of the various teeth to decide whether there has been an abnormal forward movement of the buccal segments in either or both dentures or a mesial or distal displacement of the crowns of the incisor teeth.

3. An analysis of relationship of the incisors, especially the mandibular, to their underlying and supporting basal bone.

4. An analysis of the relationship of the interproximal line of the central incisors of the two dentures to verify the findings obtained in studying the patient and to definitely outline the treatment.

5. Noting the rotation of teeth, especially that of the maxillary molars.

6. A study of the radiograms.

7. A study of the photographs to determine the relationship of the dentures to cranial anatomy and to further verify the degree of vertical growth if an overbite is present.

Having passed through these various steps of case analysis, the operator is now in a position to write down the exact requirements of treatment.

Briefly, let me mention some of the questions that will arise during this study.

1. If the inclined plane relationship is normal, is it still associated with correct relationship of the buccal teeth to their bony base, or has there been a forward shifting of the buccal teeth in both dentures, thus maintaining normal inclined plane adjustment but indicating greater complications in treatment?

2. Or, if the inclined plane adjustment is normal, has there been a forward shifting of mandibular buccal teeth in a Class II case or a forward movement of the maxillary buccal teeth in a Class III malocclusion?

3. If the inclined plane relationship of the mandibular buccal teeth is distal to that of the maxillary, is it a Class II case or a Class I case with forward shifting of the maxillary buccal teeth?

4. If the mandibular buccal teeth are in forward relationship to the maxillary, as indicated by inclined plane relationship, is this a Class III case or a Class I case in which the mandibular buccal teeth have moved forward over their bony base?

5. If the mandibular incisors are too far forward in relation to their bony base, can they be moved lingually without extraction of the first premolars, or is extraction indicated?

6. If the median lines of the dentures are inharmonious, is this due to tooth movement in one or both dentures, or the result of a forward movement of a condyle of the mandible?

7. If certain teeth require rotation, how can sufficient space be gained in order to accomplish this rotation?

8. Do the radiograms show the presence of unerupted teeth? What is their axial position within the bone? Are the third molars present and what is their position? Are there any supernumerary teeth or impacted canines?

9. What is the relationship of the mandibular denture to cranial anatomy? Is there a possibility of the dentures being too far forward in relation to their bases and to cranial anatomy? And is there a condylar shift as shown by the photographs?

10. If a closed bite is a symptom of the malocclusion, and it usually is, is this the result of lack of vertical growth in the molar and premolar areas of the denture or due to supraocclusion of the anterior teeth?

These questions having all been answered and recorded, the operator is now ready to write down the requirements of treatment in proper sequence. The

determination of the consecutive steps of procedure, in carrying out corrective measures, is exceedingly important. For instance, in closed bite cases, the maxillary incisors cannot be moved lingually until the bite is opened; teeth cannot be rotated until sufficient space is provided for them; unerupted teeth cannot begin automatic eruption until those dental units that encroach upon the area of eruption have been moved to their proper positions; median line disharmony must be overcome in the proper manner; excessive overbite must be eliminated by adjustments in those denture areas that are at fault.

This portion of the problem having been disposed of, the operator now has arrived at the point of real test of his orthodontic qualifications. Has he the means at his disposal to carry out all the requirements of treatment as recorded on the previously prepared chart? This brings us to the second reason for discouragement that I have found most universal among the men who have sought aid in graduate work. Inability to accomplish the tooth movements clearly indicated for treatment.

It is quite impossible to discuss clinical problems without becoming involved in the subject of appliances. It is not my purpose to try and expound on the virtues of any one orthodontic device to the detriment of any other appliance. Every mechanism now in use has produced some excellent results. We do know, however, that there are limitations to the efficiency of appliances. Consequently, if the case under study requires tooth movements that certain appliances cannot produce, the logical procedure is to use a device that will meet all the requirements of treatment. It is for that reason that I have trained myself to use one of the orthodontic mechanisms that will enable me to perform all of the tooth movements that any treatable case of malocclusion will require. There can be no grounds for argument with any man who is master of a mechanism that can, in like manner, meet the demands of treatment in the most complicated of cases.

But the men that I have reference to were not equipped to do this exacting work. To meet their needs it was necessary to give them technical instruction with a device that lent itself to a very definite and positive technique that was routine for each particular tooth movement, whether it was individual or mass tooth shifting. Years of experience with the edgewise arch appliance has enabled me to evolve such a technique and this is most adaptable for teaching purposes.

Nothing is more stimulating to confidence and to the maintenance of morale than to be able to attack a definite problem in a concrete and positive. manner. The elimination of guesswork from clinical efforts is a factor of tremendous influence in changing a discouraged and dissatisfied workman to an enthusiastic and confident operator. I have seen such a transformation occur time after time. Furthermore, such enthusiasm is maintained, year after year, because most satisfactory results are forthcoming from the application of this routine, purposeful technique.

Now, such a positive and definite method of performing all technical procedures can be applied to any other orthodontic appliance with equal satisfaction and with results that are limited only by the degree of efficiency of the mechanism. As Dr. Angle constantly proclaimed to his students, "There is

only one *best* way'' to perform any operative procedure. This way should be evolved by constant practice and then rigidly adhered to. By observing such a routine, the most complicated technique becomes simplified and quite automatic in its application.

This is my answer to those men who hesitate to avail themselves of the advantages of the most efficient orthodontic mechanisms because they feel that the technique associated with the use of these appliances is too intricate and time consuming. True it is that the change over is, primarily, a positive challenge to tenacity and will power. But, when the project is mastered in the positive and routine manner as previously mentioned, the results are so stimulating and satisfactory and the procedures so definite and effective that the compensation for the effort is almost beyond the expression of words. I assure you I am not dealing in fairy tales when I make this statement.

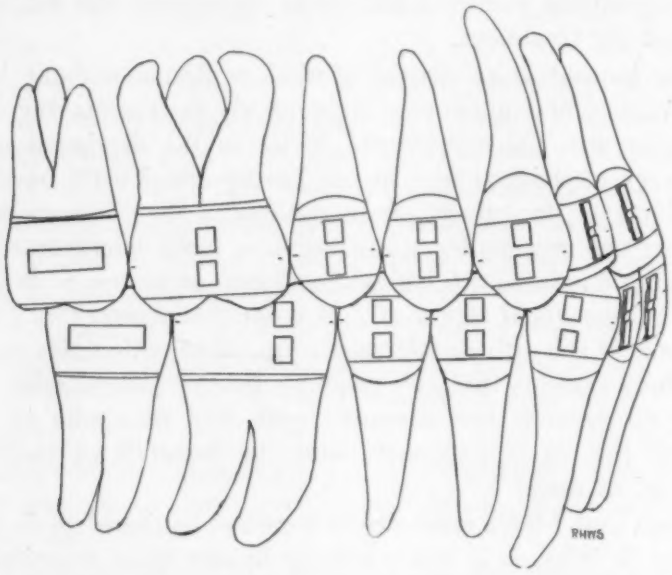

Fig. 9.—Correct positions for bands. The bracket on the mandibular first molar should be readjusted to the center of the buccal surface of the tooth as soon as occlusion will permit.

Let me briefly enumerate just what this positive technique covers, in its relation to the edgewise arch mechanism.

First, in the assembling of the appliances there is a correct anatomic position on each tooth for the location of every band. Nothing is more important, in relation to ease of manipulation and perfection of final result, than adherence to these definite rules of band application. But again let me emphasize the fact that the rules are very concrete and eliminate all guesswork.

Second, there are auxiliaries to use that are positive in their action for the production of special tooth movements such as rotations, the mesial or distal movement of individual teeth, the evolving of denture space in localized areas, the elimination of areas of excessive growth or spaces resulting from tooth extraction, and the shifting of groups of teeth, en masse, mesially or distally.

Third, the axial inclinations of teeth can be modified by moving the tooth roots or crowns mesially, distally, buccally, or lingually by arch-wire modifications made according to a prescribed routine technique.

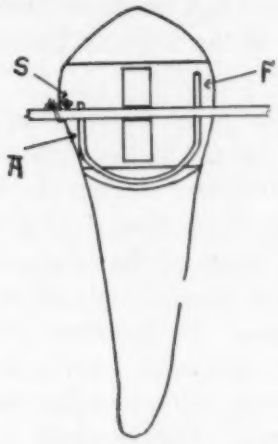

Fig. 10.—Rotating spring soldered to the bracket band. *A*, Attached end; *F*, free end; *S*, staple.

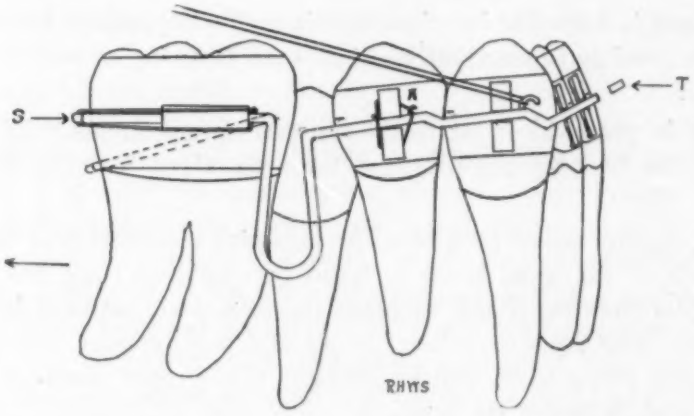

Fig. 11.—The vertical spring loop auxiliary used for producing denture space for a blocked-out second premolar. *A*, Anchor ligature spur; *S*, staple soldered onto the end of the arch wire; *T*, lingual torque in the incisor area, added to increase anchorage.

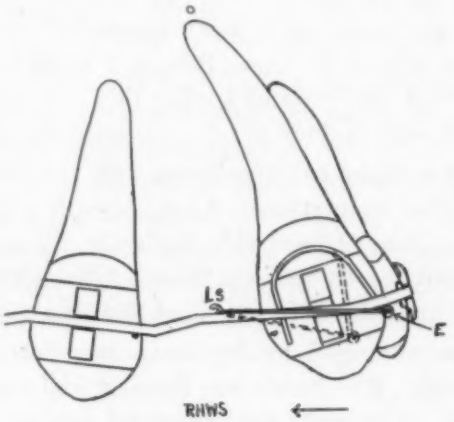

Fig. 12.—Traction spring, soldered to the canine band and used for moving the tooth distally. *E*, Eyelet at end of spring for ligature attachment; *LS*, ligature spur for fixation of the ligature that activates the spring.

Fourth, the arch-wire form can be determined previous to treatment and this form can be maintained as the working pattern throughout the period of corrective procedures.

Nothing has given me greater satisfaction than the results obtained by the use of a predetermined arch form. In the present use of the mechanism, new arch wires are frequently introduced during the period of active tooth movement. The technique of arch formation is so accurate that it is possible to form a new arch wire at any stage of the treatment period and have this new wire readily adjust itself to all bracket slots no matter how much tooth movement has previously taken place. Furthermore, it is possible for any operator, trained in this technique, to duplicate, with extreme accuracy, an arch wire made by any other operator, both using identical tooth measurements and charts drawn from these measurements. This has been proved in classwork, time and time again. Such a condition is of inestimable value in the case of referred patients.

Fifth, there is a specific location on this arch-wire pattern for every dental unit and it is possible to eventually adjust each tooth to its correct location on the arch wire.

Sixth, it is practical to correlate the two dental arches with each other by adjusting the two denture patterns, the arch wires, in three dimensions of space.

Seventh, finally, unless prohibited by excessive retardation or failure of the growth centers of the basal bones to build the required bony base, it is practical, by similar manipulations, to place the arch-wire patterns in correct adjustment with their respective basal bones and with cranial anatomy. By so doing, each and every tooth will be brought to a proper anatomic position in the architectural design of the head.

If you are able to accomplish all of these necessary requirements of treatment with the mechanism that you are now using, there is no need for you to change your methods of procedure for you are obtaining satisfactory and stabilized results and are enjoying a most successful orthodontic career. On the other hand, if you cannot do these things, I know you are not contented or satisfied with your end results, and I offer this device to you as a means of giving better and more satisfactory service to your clientele.

To those who have a desire to experiment with the more efficient appliance, I would offer the following suggestions. First, place the appliance on one of the Columbia Dentoforms. I have used this device in classwork with great satisfaction. The metal teeth are set up in a trough filled with Kerr's red modeling compound. A special articulator is provided for this setup.

The teeth may be arranged to duplicate any form of malocclusion the operator desires to treat. The bands are formed and cemented to the correct position on each tooth. The teeth are measured and an ideal chart is drawn and the arch wires are formed on this chart. These arch wires are ligated to position and then the dentoform is heated in hot water, care being taken not to get the compound too hot but just sufficiently soft to permit the teeth to move under the direction of the arch-wire force.

Various modifications of the arch wire can be made and tested until accuracy in technical procedures is obtained. One of the most practical procedures is to duplicate a puzzling case of malocclusion and proceed to correct it on the dentoform. I cannot state too strongly the value of this technical study even for the most experienced operator, while for the initiate, it is priceless. This method of studying appliance activity will be demonstrated in the clinic tomorrow.

To recapitulate, then, I would again emphasize the following factors as essential to avoiding and solving all troublesome equations.

First, make a careful study of the patient and of the malocclusion as reproduced in the plaster casts.

Second, prepare a written record of the tooth movements required as indicated by a thorough case analysis.

Third, transcribe a record of appliance manipulation indicating how these tooth movements are to be performed.

Fourth, select an appliance that has the ability to move tooth crowns and roots in all three dimensions of space and master the routine technique applicable to all these various tooth movements until efficiency has been attained and appliance manipulation becomes automatic.

In closing, I would like to offer another suggestion to those who are interested in putting some of these ideas into practice. The most practical method of doing this is through the organization of small study groups. If three or four, but not more than twelve, men will get together, every month or two, and each one assume the responsibility of contributing one thoroughly prepared item to an assigned program, which will cover case analysis, appliance manipulation, and routine technical modifications, it will not be long before the effect of this study will be felt in office procedures. I believe that only in this way will interest and enthusiasm be preserved to a sufficient degree to be effective in gaining the desired objective. The value of these study groups has been tested in several instances. I have but to mention the outstanding contribution of the men from Seattle and Tacoma, Washington, to the last program of the American Association, as an example of the influence of such a study club upon the clinical work of its various members, to impress upon you the value of these local study groups. It would be a wonderful asset to our specialty if these local organizations were formed all over the country. I hope this idea will be given thoughtful consideration.

I know of no *easy* way by which added skill and greater efficiency can be attained in the practice of orthodontics. Like all things of true value, this development comes through hard work and at the expense of personal comfort and social pleasures. But the reward, in peace of mind and ease of conscience, affords complete compensation for the effort.

886 Main Street

ONE COLLOID IMPRESSION FOR INDIRECT BAND AND APPLIANCE CONSTRUCTION AND RECORD MODEL MAKING

LOWRIE J. PORTER, D.D.S., NEW YORK, N. Y.

DURING the past four years, the writer has been using a method of taking one colloid impression for making record casts, individual dies for molar band technique, and working casts for appliance construction.

It has been our experience that molar band making was much more accurate if individual dies were made for band construction: first, because the molar tooth could be carved more accurately as a single tooth than one which was a part of a whole model; and second, because, by using individual dies, the band could be swaged. For several years we made individual plaster casts of each first molar tooth and from that a Melotte metal die was cast. After carving the die with a large inverted cone burr, the band was made and swaged.

The die was then placed in a compound impression and a working model was poured and the appliances constructed.

By this method we were able to place upper and lower appliances at the second visit of the patient (separations having been placed between the teeth at the first visit).

The objection to this method was that the placing of dies in the compound impression was not always accurate and it often resulted in the necessity of considerable appliance adjustment before cementation.

Then came the hydrocolloid materials. We used the preheated hydrocolloids for many years but they did not have sufficient body to allow an easy separation from the first pouring with plaster. It often broke up into pieces which were impossible to reassemble and it would not stand the heat involved in pouring Melotte metal.

The development of the colloid powders was a great improvement, although we found that many of these new materials did not possess the necessary body stiffness to allow a repeated separation after pouring of casts, and we also found that most of them would not stand up under the heat of pouring Melotte metal dies. Many of the colloid materials would melt and lose their sharpness of definition when subjected to this heat. After a long experimental period we found that the material put out by the Coe Manufacturing Company, called Coeloid, would stand up under the heat of melted Melotte metal and that it had a very desirable stiffness of body make-up that was of a distinct advantage in the making of duplicate casts.

But again we found objections to colloids. After pouring impressions we frequently found little bumps of plaster on the lingual surface of the teeth, which were apparently made by bubbles of saliva, or possibly from the trapping of air next to the teeth when the impression was pushed to place in the mouth.

Clinic presented before the American Association of Orthodontists, April 25, 1944.

This condition has largely been overcome by wetting the surface of the impression material after it has been placed in the tray and just before the impression is placed in the mouth. This is done by wetting the finger with water and rubbing over the surface of the colloid material. This makes a very smooth, wet surface, and usually results in very few air bubbles being trapped and gives a much more accurate impression.

The necessary setting time of colloid in the mouth is about two to three minutes.

Since this is the first impression taken, I have occasionally had a little patient who was most anxious to remove the impression before the setting time was completed. In order to overcome this desire, I do two things. First, I ask the patient to hold the impression in place with one finger of each hand. That gives the child something to do and gives him a feeling of helping in the operation. Second, to keep the mind off the idea of removing the impression, I place before the patient a three-minute sandglass timer which is made like the old hourglass and is used by housewives for timing the boiling of eggs. These can be purchased in the ten-cent stores. Placing the timer in front of a patient when the impression is inserted keeps the mind on the timer rather than on the impression, and it lets both the patient and the operator know just how soon the impression can be removed.

I have also found by asking a patient to "push hard" with the upper front teeth, when taking an upper impression, that we practically avoid all tendencies toward gagging. This is purely psychological as it serves only to keep the mind centered on the front, rather than the back teeth. These two thoughts have been invaluable in my practice.

Separators for the pouring of the molar teeth dies are placed as shown in Fig. 1, *R*. The separators are made from thin sheets of steel, or nickel silver, and cut to about the size of a penny and shaped as shown in Fig. 2. Those used on the lower casts are narrower than those used on the upper casts.

Melotte metal, or stone plaster, is then poured as in Fig. 1, *L*. This gives us a die which is to be carved with an inverted cone burr as shown in Fig. 3. About $\frac{1}{32}$ inch of the gingival tissue is trimmed away, giving a definite shoulder around the tooth. The band is now made to cover the tooth completely to just below the free margin of the gums.

The bands are then removed from the dies and the dies are replaced in the impression (Fig. 4). They are held in place in the impression by U-shaped steel pins, one end resting under the impression tray and the other end in the top of the die. The working cast is then poured and the steel pins pulled out.

The objection to the use of Melotte metal for molar dies is that appliance construction on the metal dies is more difficult due to the low fusing point of the Melotte metal. All tubes have to be soldered to the bands while off the model and care has to be exercised in appliance construction.

In the September, 1944, issue of the AMERICAN JOURNAL OF ORTHODONTICS AND ORAL SURGERY, an article by Dr. D. P. Comegys of Shreveport, Louisiana, was published on quite a similar technique, which he had shown at a meeting of the Southwestern Society of Orthodontists in March, 1944.

The difference between this technique and Dr. Comegys' technique is that he pours a working model in stone and then carves the molar teeth on that cast,

while we pour the individual molar teeth first, carve them, make the molar bands, and then replace the molar dies in the impression before pouring the rest of the working model.

The reason we prefer this technique is that my laboratory assistant believes that an individual tooth can be carved more accurately than on a large model, and we also prefer swaging the molar band, which can be done only if the band is made on an individual tooth die.

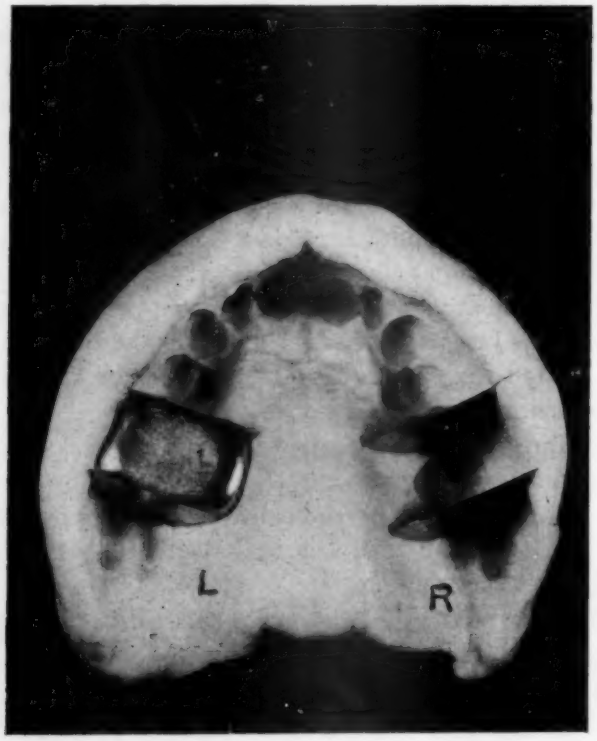

Fig. 1.

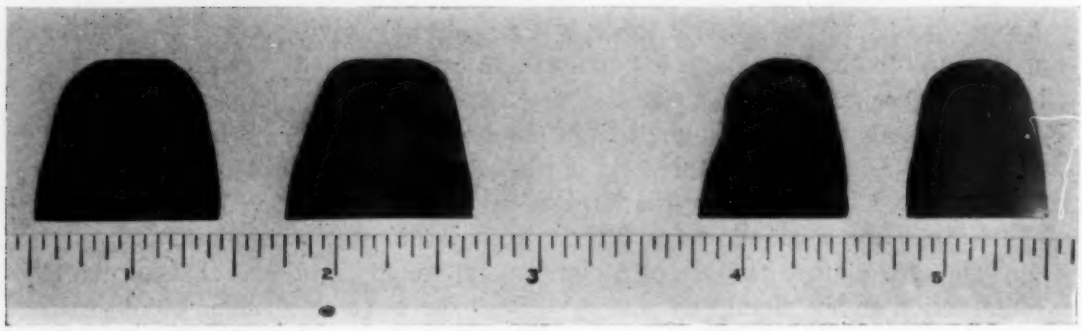

Fig. 2.

Since reading Dr. Comegys' article, we have changed the method from that shown at the American Association of Orthodontists' meeting last April. We still use the steel separators, but in place of pouring the molars with Melotte metal we now pour with stone and we find that we can swage over the stone die practically as well as over the metal die.

Fig. 3.

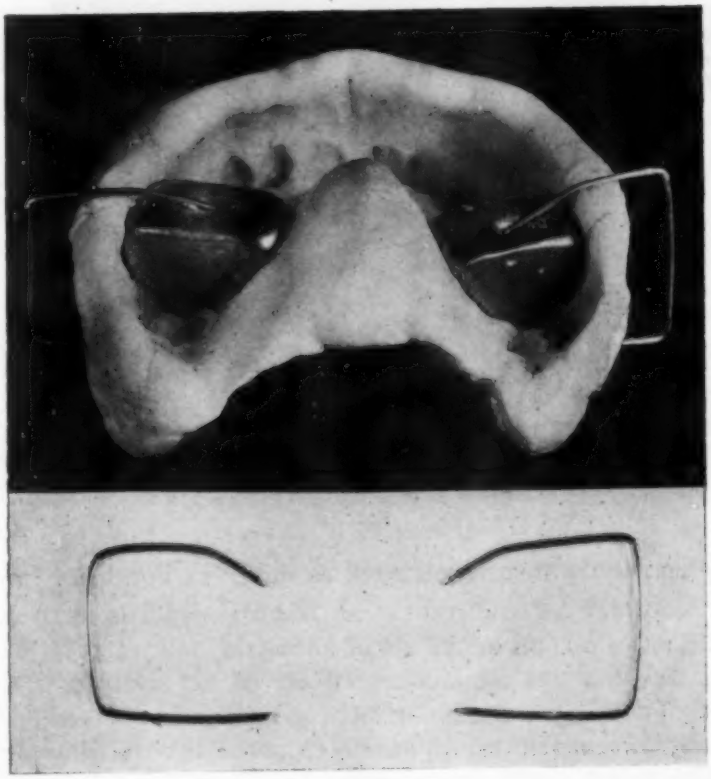

Fig. 4.

This change in technique (thanks to Dr. Comegys) is a decided improvement in this indirect method of band and appliance construction. I am, therefore, taking the liberty of recommending this change from the technique shown at the American Association of Orthodontists' meeting. While all illustrations show the technique as given at this meeting, the reader will understand that we are now pouring the molar dies in stone rather than in metal.

Fig. 5.

The appliances are then constructed as shown in Fig. 5.

As the accuracy of indirect band making depends entirely upon the capability of the technician in the art of anatomic tooth carving, we necessarily find, occasionally, that the tooth has been carved too small and the bands will therefore not go down over the molar tooth as originally planned. This happens sometimes with lower molars which have been partially covered by distal gingival tissues. If the band is small at the cervical edge, a slit is made in the band material (Fig. 6, *A*) and the band forced down over the tooth by having the patient

bite on a Pullen band-seating instrument. The seam is thus opened up the necessary amount (Fig. 6, *B*) and a small piece of band material is soldered over this opening, making the band of the proper fit and just as strong as a seamless band. Occasionally it becomes necessary to slit the band both from the gingival and the occlusal. (Fig. 6, *C*). When the band is pushed down over the tooth, the slits open up as shown in Fig. 6, *D*. These slits are then covered with a small piece of band material held in place with locking tweezers, and soldered. This repairs the band very nicely. It often helps first to solder only one corner of the added piece of band material, after which it is shaped to fit the band with contouring pliers before soldering the balance. If a band is too large, it can be slit (Fig. 6 *A*), lapped over, and soldered.

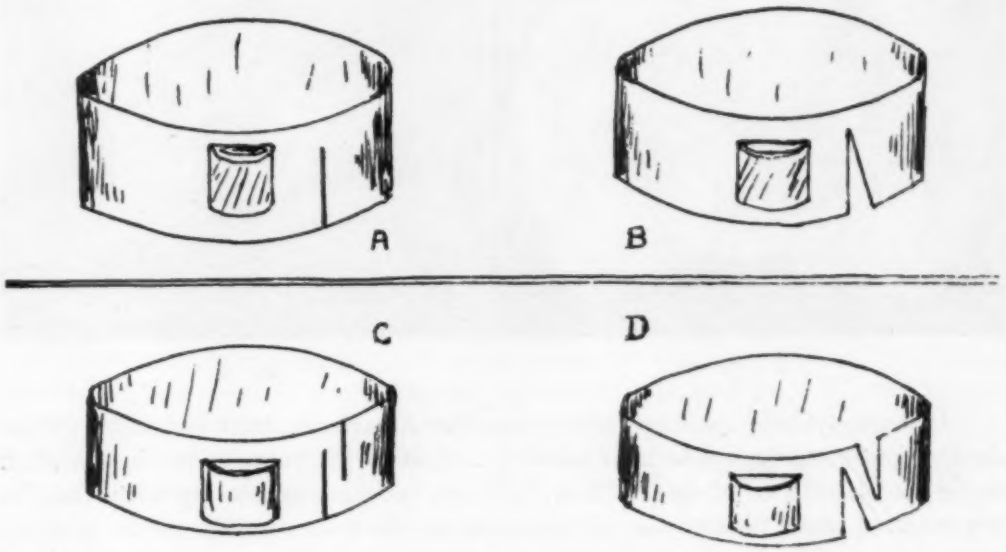

Fig. 6.

All bands are fitted with the lingual appliance in place, if a lingual appliance has been made.

We have found this method of band and appliance construction so accurate that even soldered lingual appliances are thus made and can be cemented at the second visit of the patient.

All colloid impressions should be kept in water until the last pouring has been made. It is a good plan to cover the impression with a wet cloth to prevent its drying while plaster is hardening if other casts are to be made from the same colloid impression. A colloid impression can be kept indefinitely without losing any of its accuracy as long as it is kept immersed in water.

The record model can either be poured before the working cast is made, or the working cast can be made first and the impression kept in water until such time as it becomes convenient to pour the record model.

We generally pour the working model first because the plaster, in pouring the record model, so covers the buccal anatomic portions of the impression that it is occasionally difficult to remove the impression material without some breakage of the colloid. In that case, the working cast would not be as accurate as desired.

After pouring the working cast, you will notice slight cuts in the impression material (Fig. 7) which has been made adjacent to the molars by the steel separating disks. This does not, however, interfere with the accuracy of the record casts. A slight mark will show on the record casts as shown in Fig. 8, but this is smoothed off when the record cast is trimmed and polished.

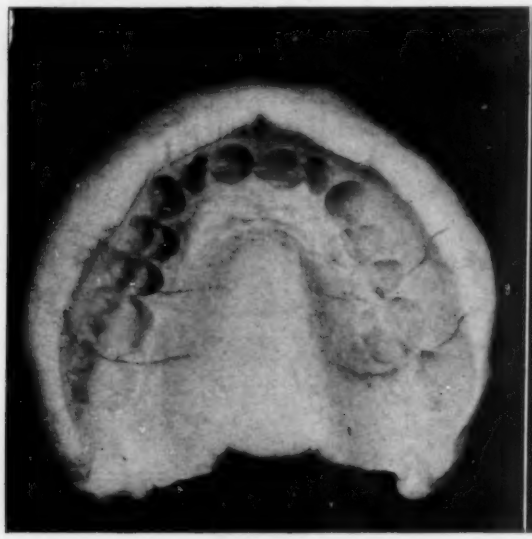

Fig. 7.

Fig. 8.

Certain techniques were shown at the American Association of Orthodontists' meeting on methods of holding and soldering tubes to the bands when using the Melotte metal dies. These, however, become unnecessary when the dies are made of stone plaster, for all soldering can be done directly on the working casts and appliance construction is greatly simplified. I have, therefore, deleted these unessential techniques from this report.

We believe this method of indirect band and appliance construction is much easier for the patient and the operator and is well worth the consideration of those using labiolingual appliance technique.

41 East 57th Street

PHASES OF MAXILLOFACIAL SURGERY OF INTEREST TO THE ORTHODONTIST

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THE material to be discussed in this paper has been gathered during every-day practice and is in no sense unusual or of spectacular character. Rather, it is an appreciation of the invaluable help and enlightenment given me by my colleagues in orthodontics, with whom I have collaborated from time to time. I say this sincerely, because most of the procedures of which I will speak would have been of little use unless either preceded or supplemented by some orthodontic treatment.

In preparing this paper, I have come to a profound realization of what has been achieved in the science of orthodontics and the tremendously broad field included in that specialty. Let us hope that the idea that "anyone can do a bit of orthodontics" has long since been relegated to the dark ages. I can remember when vulcanite palates and orange wood wedges were used to open bites and cause movement of teeth and when the split vulcanite palate with a coffin spring was used to expand an arch.

These were crude attempts, but the germs of improvement and perfection were there and were fostered into the present science and art. A little knowledge is still a dangerous thing, and while the "dabbler" with mail-order appliances may occasionally be successful in his efforts to correct malocclusion, too often the results are poor.

The most unfortunate amateur efforts we have seen have been those in which the attempt is made to draw together separated and divergent upper central incisors with rubber bands. These rubber bands quickly work up the inclined planes toward the roots and disappear under the gingiva. The child is blamed for "losing" them and other bands are placed and, in turn, "disappear." Presently, the teeth become tender, elongate, and the soft tissues swell and cause definite pain and distress. By the time we have discovered the hidden rubber bands, the teeth are almost exfoliated. Most of these central incisors in an otherwise perfect denture are ruined.

In one such case, however, an orthodontist was cajoled into constructing an appliance to immobilize and depress the teeth in the alveoli, with a fair degree of success.

The most amazing commentary on these unfortunate occurrences is that we adopted the method to deliberately extract teeth, and, in this way, good has come out of it.

In the case of patients suffering from bloood dyscrasias, such as purpura hemorrhagica and hemophilia, we have kept orthodontic rubber bands encircling the tooth roots until the tooth was exfoliated. There is some discomfort, of course, but no hemorrhage. It is a simple procedure with single-rooted teeth, and in the case of multirooted teeth, results can be obtained by carefully cutting through the crowns and separating the roots.

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IMPACTED SUPERNUMERARY AND DECIDUOUS TEETH

The problem of the impacted teeth will always be with us and is responsible for much distress to patients and concern on the part of the doctor.

Improvement in x-ray technique and in our own methods of treatment have done a great deal to allow the situations to be approached in a less apprehensive state of mind. Preliminary surgery and treatment is essential before removal. In the case of third molars, I believe that if the preliminaries are observed, particularly assurance that inflammation and infection involving such a tooth is entirely controlled, and any operation carried out with reasonable skill, the distressing postoperative sequelae can be definitely avoided.

The order of frequency of impaction was long ago stated by Cryer, viz.: lower third molars, upper cuspids, upper third molars, upper central incisors, lower second premolars, upper second premolars, and lower cuspids, these latter often in association with dentigerous cysts.

We have most frequently seen odontomas, fused and malformed teeth in the maxilla.

The common cause of impacted teeth is absence of room in the arch for their free and normal eruption. Another reason, in the case of lower third molars, is that at the time the roots of the adjoining teeth are developing, the crowns of these teeth are capable of being easily pushed aside and deflected from their normal position because the roots have not begun to calcify. Such abnormal positions are aggravated by the later development of the roots.

The same argument applies to any impaction, and the damage is probably done at the time when nothing but the crown is formed. We have frequently expressed our belief that in the case of seriously impacted molar teeth, necessitating destructive removal of bone for release, the better way is to remove the second molar. Our professional pride impels us to the operation for removal of impacted teeth however difficult such a procedure may be, but we think of many cases in which the distal surfaces of second molars have never rejoined their soft tissue attachments, with the resultant development of pyorrhea pockets which cannot be controlled. Erosion of the root surfaces occurs more often than we realize, often causing exposure of pulps.

The removal of impacted upper cuspid teeth requires a delicate approach which entails a free exposure of the tooth, sectioning if indicated, and a wholesome regard for the integrity of the lateral incisor and the first premolar teeth. Many of these teeth have been ruined by ill-considered elevation of the cuspid fragments.

We have removed soft tissue and bone from many impacted teeth which later have been drawn into good position by suitably applied traction.

The third molar is not unknown to you, and much discussion has, of course, given rise to differences of opinion as to its treatment. From a surgical standpoint, we believe that third molars which are impacted, which communicate with the oral cavity, are covered with an operculum, or by pressure are jeopardizing the integrity of the roots or crowns of adjacent teeth, should be removed.

In all other cases, we believe that the orthodontist should make the decision as to the most desirable time for removal, if it is indicated. We have been asked to extract other teeth for the orthodontist's patients, such as ankylosed teeth, supernumerary teeth, and permanent premolar teeth.

Ankylosed teeth must be removed with care and dissected free of surrounding bone with as little damage as possible. We have usually done this with fine round dental burrs.

Supernumerary teeth should not be removed unless under the active supervision of the orthodontist. We believe there is evidence that supernumerary teeth may be regarded as a cause of malocclusion and their removal is indicated, but in our experience there appears to be a definite time at which this should be done and the decision should rest with the orthodontist. Factors in establishing radiographic diagnosis have been listed by Simpson, and a classification of the causes of malocclusion associated with supernumerary teeth has been given by Flint.

The decision to extract premolar teeth must rest with the orthodontist. The oral surgeon accepts the dictum of one whose judgment he respects and should not presume to voice opinions pro or con in the matter. In my work, however, I have thought that when such a procedure is necessary, inasmuch as it is desirable to facilitate the closure of the spaces created by the extractions, the removal of a section of the bone of the lingual and buccal plates might be helpful.

We have refrained from extraction of some teeth involved in dentigerous cysts, seen in our clinic and elsewhere. These cysts are usually manifested at about the time of eruption and usually in connection with the canines, third molars, and supernumerary teeth. We have been conservative with lower canines particularly. After freely exposing the tooth, and packing the wound until healing has taken place, we have seen many of these teeth erupt to take their proper place in the dental arch.

We believe that as a safeguard against systemic infection deciduous teeth which are seriously decayed or abscessed should be removed, and space retainers should be used as indicated. These teeth are dangerous and some of our most distressing cases of osteomyelitis have originated in such a deciduous molar. This disease and the possibility of endocarditis are more disastrous than malocclusion, which after all can be corrected.

DEFORMITIES OF THE MANDIBLE

Deformities result from disturbance in development or interference with physiologic equilibrium of the structures which control their growth, such as the teeth, tongue, lips, and cheeks. Other causative factors are constitutional disorders, endocrine disturbances, traumatisms, and infections. Of particular interest to the orthodontist are the cases relating to prognathism and retrusion.

Prognathism, an abnormal protrusion of the mandible, usually accompanied by a developmental deficiency of the maxilla, may be due to a variety of influences, among which are osseous hypertrophy, improper eruption of the teeth, premature removal of deciduous molars, and injuries. The wide variation of the deformity has been classified by Landais and provides food for thought before embarking upon the treatment of such cases.

Orthodontic and surgical procedures are concerned in the solution of these problems.

In the correction of such deformities, attention has been drawn by most oral surgeons to the ill-advised surgical methods, and it has been pointed out that in many cases the prognathism was relative rather than real, and that orthodontic

treatment applied toward the end of widening or lengthening the upper jaw, would better serve the patient, and save mutilation of a normal lower jaw.

There is no doubt, however, that surgical interference is justified in many cases, and the literature on the subject is voluminous. So much has been written and such a choice of operations suggested, some relatively simple and some quite complex, that we are forced to acknowledge that there is still reason for cautious approach.

In cases where surgical interference offers the only way for correcting the intermaxillary relationship, because of the fact that the abnormality lies in the bony structures rather than in the dental arches, or because of the age of the patient, such repositioning may be brought about by osteomy or ostectomy. In osteotomy, division of the ramus of the mandible has been made either through the condylar neck, the angle, or through the ascending portion of the ramus. Section through the ascending ramus is the operation of choice. It is simple and is endorsed by most surgeons in spite of certain disadvantages, such as possible injury to the facial nerve, the parotid gland, and the internal maxillary artery, which with ordinary care may be avoided.

Lately, an approach was suggested and used by Risdon primarily for relief of ankylosis of the jaw, which we believe is an excellent method and one with much to recommend it for the correction of prognathism or retrusion.

We have used this operation for relief of ankylosis with a good deal of satisfaction and see no objection to using the method where sectioning of the ramus is desirable to permit of retraction or advancement of the body of the mandible.

By constructing a template or guide which can be hooked in the sigmoid notch, the ramus can be sectioned along any desired line and definitely in the area where the vessels and nerves can be avoided.

This, I believe, is preferable to exposure of the condylar necks or the somewhat blind use of a Gigli saw. Correction of prognathism by ostectomy is accomplished by removing a section of full thickness bone from one or both sides of the mandible.

Various sites for the sectioning have been elected by different surgeons, such as resection of the condyle through its neck, through the angle of the mandible, and through the body. The latter is the site of choice and the most practical.

Whether the bone should be removed in the premolar region or the molar region is a matter of some difference of opinion.

Teeth must be sacrificed, and after careful measurement and planning for the necessary splinting, these teeth are extracted. It has occurred to us that when the teeth are removed, a generous part of the bone, later to be sectioned, should be cut out and the space filled with sterile gutta-percha and the gum sutured to enclose it. Later, when the external approach is made to remove the bone section, the operation is facilitated and the possibility of entry into the oral cavity made relatively remote. As New has shown, these sections can be made with preservation of the nerves and vessels.

Mandibular retrusion presents two problems, that of a shortening of the body of the mandible, and also of the ramus.

To bring the jaws into more normal occlusion, it is necessary to employ essentially the same surgical procedures as for the correction of prognathism.

The difference is that if the ramus is sectioned, it may not be possible to bring the jaw forward sufficiently and still maintain broad contact between the sectioned bone, the limit of forward movement being only about 1½ centimeters. In minor degrees of retrusion, this possible forward movement may be sufficient, but if not, several authors have used oblique and L-shaped cuts through the bone of the body of the mandible. Kazanjian has used these methods with success.

It is to be noted that after orthodontics or surgical operation for a mandibular retrusion, the obliquity of the chin remains a noticeable feature, and it may become necessary to give a prominence to the chin by the implantation of cartilage or bone.

The correction for open-bite is made by using essentially similar surgical procedures as those for the correction of prognathism or retrusion.

The orthodontist will realize that these procedures are not indicated except in those cases where age is the factor indicating their desirability. Before the twelfth or fourteenth year, it may be possible to correct much or all of the deformity by orthodontics. Whatever the indications and the decisions arrived at, there should be full accord and cooperation between the patient, the surgeon, and the orthodontist, and the operations should not be undertaken lightly.

ABNORMAL MUSCLE FUNCTION

If we look at a dissection of the muscles of the face and neck we are impressed with the complexity of the arrangement.

The muscles of facial expression and mastication completely clothe the facial bones to which they are intimately attached.

Perhaps no group of muscles is so constantly and persistently in action, and while balanced function is normal and desirable, many people develop habits, tricks, and ties which must be a major problem of orthodontics. There is undoubtedly an influence on the hard structures, and perhaps there develops a vicious angle in which the attempt at compensation results in overdevelopment of some, and a relative weakening of the action of other muscles. Interest has developed in this phase of orthodontic correction and recently Dorrance and Loudenslager published an article on hypermotility of the upper lip. They designate as hypermotility that condition in which, in repose, the maxillary incisors and canines are not covered by the lip, the individual exposing not only the upper teeth but also the alveolar ridge above the teeth in smiling or laughing.

The chief factors in the deformity are a shortening and overactivity of the muscles which elevate the upper lip.

The etiology is obscure and no attempt is made to discuss prevention, but orthodontic treatment is suggested to correct the occlusion and possibly maxillary prognathism. The operation entails an incision in the dentolabial fold from canine to canine, and after elevation of the soft tissues, a careful section of the levator labii superioris, levator labii superioris alae que nasi, the levator anguli oris, the zygomaticus minor, and the vertical muscles between the upper lip and the nose.

The authors call attention to the depressing effect upon the morale of those afflicted with this common deformity and are very enthusiastic over the results obtained by the operation.

Using a similar surgical approach in collaboration with Dr. Harold Noyes and Dr. Crane, we have attempted to solve the problem of disturbance in the function of the muscles of the lower lip, particularly the mentalis. The result of these operations will be published by Dr. Crane in his graduate thesis.

ABNORMALLY SPACED MAXILLARY CENTRAL INCISORS

It would appear that often the permanent maxillary incisors show a wide interdental space on eruption. Usually these spaces are closed as the dentition develops and the eruption of adjacent teeth takes place.

On the other hand, a variety of conditions are recognized as providing abnormal interference to natural closure of the space. We mention supernumerary teeth and abnormal labial frenum.

In our early experience, a great number of children had the frenum removed, but now this operation is done rather infrequently. There is diversity of opinion regarding the need for it, and in all probability the problem is solved by the orthodontist most often, without surgical interference.

There are undoubtedly some cases in which there is abnormal attachment and development. We think fibrous attachment extends lingually between the incisors and deeply to the maxillary suture. We believe that if the palpating finger placed on the incisive papilla detects movement when tension is put upon the frenum, removal is indicated.

The question of cautery or scalpel removal appears academic. The operation is simple and we have always been able to complete it under novocain. If extension of incisions into the lip attachment is avoided, suturing is usually unnecessary.

Abnormal lingual frenum which results in tongue-tie should be mentioned. The condition is rare, and may or may not be the cause of speech difficulty. When tongue-tie is diagnosed the tense mucous band may be cut close to the symphysis of the jaw. If the frenum is short and thick, a more extensive flap operation may be demanded. In any case, too enthusiastic cutting is to be avoided to protect the vulnerable ranine vessels.

JAW FRACTURES

We have found that the use of orthodontic appliances has been of great aid to us in the treatment of fractures of the jaws.

The banding of teeth and the adjustment of arch bars has been almost indispensable in the fractures occurring in young mouths, particularly when only partially erupted teeth were available and in those cases where it was necessary to provide intermaxillary traction, by use of rubber bands.

Condylar fractures, both unilateral and bilateral, have been treated very satisfactorily by these methods. In adult mouths the problem of fracture in cases where teeth are few and far between has been solved for us by the help of the orthodontist.

PATHOLOGIC FRACTURES

In some diseases of the jaws, we are confronted with the possibility of a break in the continuity of the mandible as a result of the effect of the bone destruction.

Such disasters occur in the wake of tumors, cysts, and osteomyelitis. We have found it practical to avert some of the trouble by the use of some form of splint. In some cases, orthodontic appliances will prove to be valuable preventive or sustaining measures. They are easily applied and provide all necessary rigidity, are not cumbersome, and can be kept clean with little effort.

CLEFT PALATE AND CLEFT LIP

It may be stated that practically every case of cleft palate in which the alveolar ridge is involved cannot be considered satisfactorily closed without the aid of the orthodontist.

The adjustment of the upper arch to the lower arch, and hence the occlusion of the teeth and provision of support for the upper lip, will usually be necessary and highly desirable to obtain proper facial contour and harmonious appearance.

The teeth are often misplaced and some may be missing, and the development of the maxilla may lag behind that of the mandible.

Orthodontic appliances are of great help in readjustment of the parts and create stimulation to growth and development. These cases need the support of retaining appliances to maintain the new positions and may be used to carry replacements for missing teeth.

Occasionally, in extremely wide clefts, it is advantageous before surgical closure is attempted to use the deciduous teeth, before the roots begin to absorb, to carry orthodontic appliances which will close the wide cleft. Following operation, expansion may be necessary.

The best time, as far as we know, to commence orthodontic treatment in cleft palate cases is after surgery has been completed and when the permanent teeth have put in an appearance.

There is no operation which does more for a human being than the repair of cleft lip and palate.

The aspect of social rehabilitation overshadows that obtained by the correction of any other congenital deformity.

Orthodontics plays a great part in the improvement and often the transformation in personal appearance, and we lean heavily on our orthodontic colleagues in our work.

We have been fortunate in getting whole-hearted cooperation in these cases in a field where there are many economic obstacles. Young people often are not well enough established to support great financial expenditure.

Recently, a patient was referred to us by an orthodontist who had been consulted regarding correction of a supposed deformity affecting the right lower jaw. This case proved to be a facial paralysis of the left side, sustained as the result of a gunshot accident in early childhood. We were able to improve the situation by suspension of the sagging muscles with strips of fascia lata anchored across the face and into the temporal fascia.

The cooperation between the general practitioner, the orthodontist, and the oral and plastic surgeon is a sensible and desirable foundation on which to build better treatment of dental, oral, and facial malrelations and deformities. It is to this end that this paper is presented.

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HABITS ASSOCIATED WITH DENTAL ANOMALIES

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TO UNDERSTAND the characteristic bodily or physical condition or the mental character or disposition of human beings we must examine the subject of "Habit." An individual habit is defined as a characteristic or customary condition acquired by frequent repetition of an act or acts. Habit in a general sense is defined as customary condition, constitution, or mode of being. Habits can be beneficial or detrimental. They are the tools by which we achieve health, happiness, and efficiency, and on them depends the conservation of time, strength, and material resources. They are demands for certain kinds of activity.

The fact that so much of our behavior depends upon habit makes this aspect of life of the first importance, for the term habit embraces *all* acquired methods of acting and thinking. The more frequently a particular act or thought is repeated, the more likely it is that it will occur again under the same existing conditions. Everyone appreciates how the constant repetition of any act increases the ease and assurance with which it can be performed. The routine of the simplest existence constantly makes demands upon the habits that we have acquired in the process of growing up, as: the rising hour, the daily bath, exercise. Our attitude toward other members of the family or our associates in the shop or office, and our thoughts and actions as they help or hinder us in the adjustments we have to make with other individuals, are largely a matter of habit. We are hardly aware of the often almost automatic guidance and direction of our decisions by unseen force of habit, which rules our thoughts, determining which shall appear and be strong and which shall pass from light into obscurity.

Certain types of habits are likely to be associated with one another and with definite character traits. The ambitious person is likely to work persistently toward the desired goal; laziness, however, is often associated with carelessness, selfishness, disregard for others, and lack of ambition, since the individual is not working toward any definite objective.

From birth, the child exhibits certain tendencies in dealing with the simplest problems that he is compelled to meet in his daily existence; eating, sleeping, eliminating, and the like. This process of adapting natural tendencies to daily needs is basic to what occurs later in life when he gradually begins to formulate ideas concerning such things as honesty, truthfulness, going to church, and paying bills. These tendencies, which gradually become habits by constant repetition, enter into the formation of what we call personality, and the more frequently the habits are performed or repeated the more likely they are to become permanent.

This paper was presented before the American Board of Orthodontics in partial fulfillment of the author's requirements for certification by the Board.

The permanency of habits, however, is not solely dependent upon repetition; the mere fact that the individual is made to do the same thing over and over again gives us little assurance that the practice will be long continued after the supervision has been removed. Unless the task is performed efficiently and with a fair degree of ease, resulting in satisfaction on the part of the doer, we can hardly expect permanence. For this reason, as will be pointed out later, in our efforts to establish desirable habits the attempt must be made to see that successful accomplishment is rewarded by emotional satisfaction.

This emotional satisfaction may be directly associated with the habit we are trying to establish. The amount of emotional satisfaction that the child obtains from learning proper habits of eating, eliminating, and obedience is derived to a great extent, though perhaps indirectly, from those whose approval he desires. The child must necessarily learn to perform many duties from which he gets but a limited amount of pleasure, either through the means or the end. Often the task is irksome and uninteresting. Then, too, with a certain group of children, the approbation attendant upon accomplishment is not in itself a sufficient incentive to make the effort worth while. All children have not the same regard for praise, nor do all of them have that personality trait which makes them want to please.

Other incentives than those of satisfaction and sanction must be utilized, however. Reward, praise, blame, and punishment must all be carefully considered in an effort to bring about desirable habits and to assist the child in developing a personality that will help him to assume responsibility later on in life. The same thought must be kept in mind in any effort to eradicate undesirable habits and personality defects already established. These must be replaced by new interests; for it is not sufficient simply to build up barriers, which later thwart the desires and block the emotions that act as the driving forces for conduct. These forces must find new outlets in ways both compatible with the environment and satisfactory to the child. The child should be led and not pushed. All too frequently it is the emotions, rather than the intellect, that act as the stumbling block to good habit.

In order to block habits that are undesirable and to cultivate others which will ultimately be useful to the child, it is of paramount importance to find a motive for the abandonment of the old habits and the acceptance of the new; that is, to substitute a new desire in place of that which motivated the rejected habit. Furthermore, the idea of the new habit must be made clear in the mind of the child. It must appear to him as a thing capable of achievement, and the advantages to be gained from its development must be presented in such a way that satisfaction will come with the striving as well as from the accomplishment.

All too frequently, parents are led to minimize the seriousness of undesirable habits, personality defects, or delinquent trends, by a feeling that the child will outgrow his undesirable habit. As a matter of fact, children do not usually outgrow habits. Rather, the habits tend to "ingrow" until, as has been stated before, the habit becomes a part of the child.

Children at birth, it is important to bear in mind, are without habits. It is the process of the child's existence which necessitates the taking on of various

modes of action. Whether these repeated modes of action are to be of desirable or undesirable habits depends upon influence and training.

Orthodontic literature, on the whole, contains very little information regarding the formation of habits or their effects on the dental mechanism. Especially is there little regarding a satisfactory solution for the exciting detrimental influences such as thumb-sucking, finger- or fingers-sucking, lip habit, or tongue habit.

There are several habits which bear directly or indirectly upon the growth and development of the child. This is particularly true of detrimental habits exercised in connection with the denture and its associated structures. Thumb-sucking, finger-sucking, lip and tongue habits are probably the most common pleasurable habits which stimulate abnormal tissue growth in infants and young children.

To understand these habits and their formation, it is of importance that we search for the cause of the particular habit which has been formed, and understand the action, if possible, from the viewpoint of the child. If the cause or underlying motive of the habit can be understood, then treatment of the habit may more easily be perfected.

From habits similar to those named above, certain pleasurable organic sensations may be derived. These are sensations aroused by stimulating various parts of the body, from which stimulation the individual gets varying degrees of satisfaction. How tenaciously the child clings to his unudesirable habit depends upon the intensity of this satisfaction. For this reason all children do not show the same reluctance to relinquish their hold on pleasurable habits. Some of them resort to sucking habits mostly as a dispenser of comfort in time of trouble. Often these habits, whether tongue, lip, thumb, or blanket, are closely associated with punishment, disappointment, or unhappiness, and occasionally with illness.

Through the sucking process children receive their first nourishment. The act of sucking is performed through a well-arranged system of muscular movements which serves a most useful purpose in the early life of the child. The difference between the child's nursing its mother and sucking its thumb or finger, however, is that the first act is both useful and pleasurable, while the latter is only pleasurable and may become a very harmful and undesirable habit.

Furthermore, the action of thumb-sucking is quite different from that of normal nursing. In thumb-sucking the tongue is wrapped tightly around the digit and the cheeks exert an inward pressure, while in normal nursing the tongue flattens and exerts a lateral pressure, and very little inward pressure is exerted by the cheeks. Because of the anterior pressure exerted by the thumb and the inward pressure by the cheeks, the arches (the maxilla in particular) have a tendency to elongate and become narrowed. Especially is this true in the canine region where force is more pronounced.

Children who suck their thumb, finger, or fingers have usually established the habit before 1 year of age. Often their first voluntary efforts are directed toward sucking a finger or thumb, and as soon as the child is able to coordinate muscular movements, the sucking habit is practiced quite frequently in between feedings. The length of time the finger or thumb habit persists varies with the individual child, however. Many children discontinue this habit, either

voluntarily or by persuasive measures, before the habit is well established, but others continue the habit for a few months or few years before they see the fallacy of it. Indeed, this writer has known a few cases where the habit has persisted into adulthood. There are children who seem to be cured, yet they carry on with less frequent indulgence at night and during fatigue or mental irritation. Doubtless such secret indulgence is often responsible for the relapse of many treated protrusion cases.

There are several types of pressure exerted by the use of the thumb and fingers which cause deformities. The extent of the deformity is governed by the amount of pressures used and the direction in which it is exerted. If a finger is sucked while the palm of the hand is in a downward position there will be little, if any, muscular pressure exerted, as the fingers can easily bend and yet the arm rests in a comfortable position. If the palm of the hand is directed upward, however, the arm will be in an uncomfortable position necessitating a twisting of the arm, and a counterpressure of the thumb or finger is necessary to stabilize the digit and relieve the strain. Pressure exerted by this action, when practiced regularly, is sufficient to cause tissue changes. If the thumb is placed high on the inclined plane of the palate, it will cause an anterior movement of the premaxillary bones together with the teeth which they support, but if the pressure is placed in a lateral direction the distortion will develop in the direction of the pressure.

Malocclusion is also caused by holding the digit between the arches, although there may be little or no sucking of the digit. The digit rests between the arches and is a hindrance to normal eruption. A labial or buccal tipping of the maxillary teeth, or a lingual tipping of the mandibular teeth, may be caused in the area in which it rests. Extrusion of the teeth through the gum is not prevented, but open-bite is often caused by inhibiting vertical growth of the supporting bone, and this may possibly be accompanied by protrusion.

In order to better understand deformities caused by abnormal lip and tongue habit, it is well to get a mental picture of the lip and tongue in their normal positions while at rest and also during useful functions. During periods of rest the arches are held in normal relationship, with the teeth in the mandibular arch being separated slightly from those in the maxillary. The tongue fills the lower and anterior portion of the inner oral cavity, causing the space between the tongue and palate to form a partial vacuum. The lower lip contacts the anterior surface of the mandibular anterior teeth and the incisal third of the labial surface of the maxillary teeth, while the upper lip rests against the cervical two-thirds of the labial surfaces of the maxillary anterior teeth. During swallowing, certain functional movements are performed in which the lips and tongue have a definite action. At the beginning of the swallowing act the mandible is raised and the opposing jaws are brought into their usual relationship. Coincident with this action, the tongue is raised and drawn posteriorly, forming a partial vacuum in the anterior portion of the mouth. This action draws the lips tightly against the anterior teeth, with the lower lip engaging the incisal tips of the maxillary anterior teeth, while the cheeks are sucked against the buccal surfaces of the molars and premolars. After swallowing, the deglutitory muscles relax, leaving the whole mechanism in a state of ease and symmetry.

To contend that the tongue and lips are the total causes of all anomalies in which they are an influence would be erroneous, for there are two types of open-bite. One is caused by hereditary influences or some disturbance in growth factors, such as abnormal endocrine supply or other constitutional disturbances; the other is caused by abnormal muscular action.

In the first type, the tongue and lips are not necessarily associated with the beginning of the open-bite, but once the space is sufficiently large to permit easy access of the tongue and lips they are contributing influences. If this habit becomes established, a real problem will be presented to any line of treatment. The second type of open-bite, which has been caused by abnormal muscular action, may have as the contributing factor or factors one or a combination of lip, tongue, cheek, or finger habits or the persistent use of some foreign object. Often open-bite is caused by holding the fingers or thumb between the teeth, at intervals, during the eruption period of the deciduous teeth. In an open-bite case caused by a finger or thumb habit, one may also expect the function of the tongue to become involved. In many cases, although the finger habit has been broken, the tongue continues to occupy the open space. If the tongue habit grows and is practiced with increasing vigor during the transition from the deciduous to the permanent dentition, it will not only be thrust through the space at intervals but it will be pushed through the space with great force each time swallowing becomes necessary. It is practically impossible for a patient who has practiced swallowing with the tongue between the mandibular and maxillary anterior teeth to swallow with the tip of the tongue against the anterior portion of the palate. All the patients with severe open-bite whom the writer has had occasion to observe are affected with abnormal tongue position during deglutition. Much time and patience is required on the part of the orthodontists as well as the patient to correct the swallowing habit.

Open-bite is often started immediately following the loss of deciduous teeth, as at this time children find amusement in pushing their tongue through the newly made space. After this amusing incident has been practiced for a sufficient length of time, it becomes an involuntary habit. This type of open-bite is not confined to the anterior portion of the mouth, for often the mandibular and maxillary anterior teeth are in satisfactory relationship, and it is the premolar area which is out of occlusion because of tongue or cheek habit.

The writer once knew a boy who during his childhood sucked his thumb for a short while. He substituted for the thumb-sucking habit a sucking habit unlike any ever before observed. He would separate the mandibular teeth from the maxillary teeth slightly, push his tongue forward through the space and contact the lips with the tongue while the lips were together. He would then slightly open and close his mouth. During this act his tongue would be thrust through the space between the arches as the space increased, and withdrawn as the space diminished. In this action the labial pressure of the tongue was greater than the lingual pressure of the lips, thereby causing a bimaxillary protrusion. Oddly enough, this patient exhibited no tendency toward open-bite.

Many lip habits are acquired as a result of thumb-sucking. For instance, the abnormal stress of some types of thumb habit causes an anterior development of the premaxillary and maxillary bones, moving the teeth they contain with them. Then, under such conditions, the lower lip drops between the man-

dibular and maxillary anterior teeth, promoting the abnormal growth of the maxillary arch, and in return the anterior development of the mandible is retarded.

In rare instances the lip habit affects only a portion of the anterior teeth. The author has two cases in mind in which the occlusion was satisfactory except that a maxillary central and lateral incisor were being pushed out of proper alignment by abnormal lip habits. This condition was induced by the biting of only half the lower lip, or it may have been that one central incisor erupted labially to the other and the habit was prompted by placing the lips between the teeth. For the same reason the lateral on the affected side assumed a like position.

In attempting to correct lip habits, consideration must be given to the extent of protrusion or other deformity caused by the habit. Often it is not possible for the child to close the lips together, except by extreme effort. Under such conditions contact is maintained only momentarily, then the position of disadvantage is reassumed. While it is well to stress the importance of the ultimate correction of lip position, in the extreme cases an early normal lip function cannot be expected. Explanation of the tediousness of the corrective process should be made to the patient lest he become discouraged and cease cooperation before correction is accomplished.

There is some question as to whether abnormal breathing or mouth breathing should be classed as a habit even though the formation of this abnormal condition is without any physical or mental assistance from the affected child. Mouth breathing is abnormal and its effects are closely correlated with certain types of malocclusion and facial deformities. For this reason, if for no other, our study now turns to its causes, effects, and remedies.

The newborn child, unless basically deformed or hindered by pathologic tissues, breathes through the nasal passages, and he will continue to do so unless these nasal passages are obstructed. When a child first encounters an obstruction in the nasal passage (this obstruction often being a simple mucous secretion caused by common cold), he tries very forcefully to continue breathing normally, and he is much disturbed if he cannot do so. If the obstruction lasts for only a few hours or perhaps a few days before subsiding, the child will resume normal breathing without apparent damage having been done. If, however, the obstruction is of a semipermanent nature such as pharyngeal tonsil enlargement, the child cannot breathe through the nose and eventually the nares may become so small from disuse that the child will be unable, even by attempted forced breathing, to obtain sufficient oxygen to survive. If the obstruction is sufficiently large and constant enough to make impossible the intake of sufficient air for body maintenance, even though the nares are not completely closed, the child will not breathe normaliy at any time; for it is impossible to breathe through the mouth and nose at the same time. If the nares are obstructed only a portion of the time, the child may, and probably will, breathe through the nose when possible and breathe through the mouth the remainder of the time. As long as the patient breathes normally when possible, and mouth breathing does not predominate, it is unlikely that great deformity will result, and as soon as the interference is removed permanent normal breathing can be expected.

Balyeat and Bowen[1] have given much study to allergy and its effects on the development of the face. It is their contention that children who have suffered from perennial nasal allergy during early childhood have paranasal depressions which give the nose undue prominence. These children often have a congestion of the mucous membrane of the paranasal sinuses, and the openings from the nose into the sinuses are partially or totally blocked by mucous or swollen tissues most of the time. This prohibits proper aeration of the sinus, seriously hinders their development, and causes underdevelopment of the ethmoid, sphenoid, and paranasal sinuses. This lack of proper development produces a characteristic facial deformity, for it affects arch growth to the extent that the maxillary is very elongated and V-shaped with overlapping of the incisor teeth, often causing a Gothic arch.

Five hundred children, between the ages of 6 and 14 years, were divided equally into five groups and a study made of the chronic nasal allergy cases. The children were selected in groups of 100 from the following: Crippled Children's Hospital cases, white school children, children suffering from chronic nasal allergy, Indian children, and Negro school children. It was found that the four groups, excepting the group with chronic nasal allergy, averaged 5 per cent with narrow V-shaped arches and overlapping anterior teeth, while those affected with allergy averaged 24 per cent. It is not quite clear whether or not the chronic allergic condition caused this striking difference directly or whether it caused it indirectly through the swelling of the mucous membrane or by otherwise obstructing the nasal passages, thereby necessitating mouth breathing. It is the writer's belief, however, that chronic nasal allergy is often a definite cause of mouth breathing.

The general belief is that a narrow dental arch will be associated with a correspondingly narrow nasal floor, and that a wider arch will be associated with a wide nasal floor. However, examination by Cryer[2] of a large number of skulls does not confirm this. He finds many skulls having a wide palatal arch with a narrow nasal floor and narrow palatal arch with wide nasal floor.

Measurements of the maxillary dental arch between the buccal surfaces of the first molars have been taken and the width of the floor of the nose measured at a corresponding point in the same plane. These measurements reveal that from normal-sized typical adult skulls the maxillary dental arch measures about 58 mm. while the width of the nasal floor measures about 29 mm. From typical skulls without marked irregularity, the width of the nasal floor will be found to be about one-half that of the dental arch.

Measurements taken from a group of skulls revealed great variation in the width of the maxillary arches as compared with the width of the nasal floors. Of this group one skull showed a very wide arch with a narrow compressed nose; the arch measured 66 mm. while the nasal floor measured only 20 mm. Another skull revealed a very narrow arch which measured only 44 mm. while the nasal floor was wide; the width of the nasal floor was 35 mm.

While the width of the maxillary arch compared with that of the nasal floor varies greatly, the width of the nasal cavity compared with that of the maxillary sinus is fairly constant in an inverse ratio. Usually, if the nasal cavities are large, the maxillary sinuses are small; if the sinuses are large, the nasal cavities are small.

While this information is interesting, its value is lessened because of our inability to determine the cause of variation in width of arch, nasal floor, and antra. If we were able to obtain complete life history, and the skulls examined were sufficient in number, we might be able to obtain valuable information by tabulating our findings. This variation of data tends to show, however, that the undeveloped nares, usually associated with mouth breathers, is not necessarily accompanied by a narrow arch. Consequently, it is possible to be an habitual mouth breather without having deformed arches. In spite of this evidence, best-informed students are almost universally agreed that an abnormal breather of long standing has a characteristic appearance and usually exhibits a distinctive type of malocclusion and arch form.

Because it is an accepted fact that under favorable conditions abnormal muscular pressure will cause teeth to assume malrelationship, it is logical to assume that external pressure, if applied with sufficient force and over long periods of time, will cause similar developments. Sleeping habits are most detrimental because they are usually initiated while the young child, whose bones are very plastic, spends most of his time in bed.

The most common manner in which external pressure may become effective is through incorrect posture during sleep. Those who study posture habits find that resting the face on the hand, arm, or similar unyielding objects produces a malformation. Unfortunately the face is the part of the head approximating the offending pressure, and this results in a malposition of the teeth. Not infrequently the child uses only one hand or one arm in abnormal position, resulting in deformity of only one side of the face. Both sides, however, are often equally affected.

Narrow arches are often caused by the pressure exerted by an abnormal twist of the neck plus the weight of the head resting on one side of the face while the child is sleeping on its stomach, that is, if this position is indulged in for any large portion of the sleeping hours. Mothers are often responsible for the formation of this awkward sleeping habit, because they place the small child on its stomach to relieve fatigue, and the child comes to like this position.

Posture habits not associated with sleep are also often responsible for abnormal tooth relationship. For instance, sitting with the chin on one or both hands tends to cause intraversion of the posterior teeth so that the anterior teeth appear in supraversion. Another bad posture is to rest the side of the face on the hand of the same side, for this tends to force the arches lingually on the affected side.

Patients affected by external pressure are not so numerous as those affected by thumb, lip, or tongue habits. These influences when present, however, are very potent and must be eliminated if treatment influences are to be lasting.

In our efforts to eliminate these undesirable habits, the first and by far the most important step is for the parents to get a rational point of view toward them. Parents, mothers in particular, are prone to be very sensitive about undesirable habits in their children. They take the problem in a very personal way, and the resulting emotional turmoil often defeats the purpose for which they are striving. To many children it is a source of satisfaction to know of some simple way to agitate the parent, and the agitated parent is always handicapped in dealing with the child.

When habits are first observed, partial temporary restraint can be utilized to good advantage. Thumb-sucking, like tongue habits, being a psychological problem, is not correctible in all cases by any one given formula. Many appliances and remedies, which are familiar to orthodontists, have been suggested at various times for the correction of these habits. All of them have their good points, yet it must be conceded that what might be effective with one child probably would not prove adequate for another. Whenever possible, such methods should be used with the consent and cooperation of the child, as a means of helping him overcome the habit and not as a punishment in any case. If the child is convinced that in breaking the acquired habit his efforts will be largely responsible for the outcome, the chance of success will be greatly enhanced.

REFERENCES

1. Balyeat, Ray M., and Bowen, Ralph: Facial and Dental Deformities Due to Perennial Nasal Allergy in Childhood, AM. J. ORTHODONTICS AND ORAL SURG. 20: 445, 1934.
2. Cryer, M. H.: The Internal Anatomy of the Face, Philadelphia, 1916, Lea & Febiger.
3. Dewey, Martin, and Anderson, G. M.: Practical Orthodontics, St. Louis, 1935, The C. V. Mosby Co.
4. McCoy, James D.: Applied Orthodontia, Philadelphia, 1927, Lea & Febiger.
5. McCoy, James D.: The General Health Benefits of Orthodontic Treatment, AM. J. ORTHODONTICS AND ORAL SURG. 27: 369, 1941.
6. Swinehart, Earl W.: Relation of Thumb-Sucking to Malocclusion, AM. J. ORTHODONTICS AND ORAL SURG. 24: 509, 1938.
7. Thom, Douglas A.: Everyday Problems of the Everyday Child, New York, 1928, D. Appleton-Century Co., Inc.

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ORTHODONTICS' LAST DECADE OF PROGRESS

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FOR some time prior to the 1930's there had been a period of gradual awakening to the complex nature of the orthodontic treatment problem. Failures were reported by students of our science, and we began to get some conception of wherein our knowledge was deficient. Empiricism was giving way to research, and treatment was being directed more by the test tube and microscope and less by the clinical experiences of trial and error. Milo Hellman was talking about growth and development; Clinton Howard preached about the endocrines; and A. LeRoy Johnson was convincing us that orthodontics was truly a biologic science.

By 1930 we had some idea of the immensity of the science and had been able to identify many of the factors in need of study. In fact, by this time, some of them had already received important investigation. Efforts had been made to define "occlusion" (LeRoy Johnson), and "normal occlusion" (Angle, Johnson, Hellman). Attention had been directed toward "individual variation" (Milo Hellman). Growth and development were common subjects on programs at orthodontic meetings, as were genetics, endocrinology, "physiologic tooth movement," histology of bone, nutrition, and comparative anatomy. Thus were etiology, diagnosis, and prognosis being stripped of their relatively philosophical demeanor.

There can be no doubt but that etiology, diagnosis, and prognosis in an orthodontic practice are still largely speculative. This is natural and very likely will always be somewhat true. We should, and do, expect that the more our knowledge expands, the greater will be our awareness of things that are yet unknown. Accordingly, we may be pardoned for reflecting upon our progress of the last decade.

In the field of etiology we have gained a more accurate appraisal of the effect of habits on occlusal relationships. Their importance is accepted still, although not in the same degree as formerly. Genetics have stolen some of their thunder. For instance, many of us no longer worry so often about thumb-sucking. In the past, dentofacial anomalies of the type of Class II, division 1 (Angle) were usually explained by any existing thumb-sucking habit. The tendency today is to regard the habit as a contributing influence in a large percentage of these, with something else, frequently heredity, as the primary etiological factor. Moreover, the later age selected for mechanical therapy often allows time for the disappearance of the habit.

In like manner, changes in viewpoint and practice may be detected throughout our entire field. Everyone now has some understanding of spacing between teeth in dental arches bearing correct mesiodistal relationship to one another, and

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of the reason why such variations are considered normal for the individual. And we now see why utmost caution must be exercised in approaches to dysgnathic abnormalities.

Hawley's charts and Bogue's index have lost their prominence but are not forgotten. Their use in arch predetermination has been refined. Further, we have witnessed sublimation of gnathostatics and growth of the Tweed philosophy.

The universality of the expansion arch and the bite plane has been reduced somewhat. Angle's edgewise arch has been bolstered by Tweed, and we have seen the rise of Johnson's twin arch and Atkinson's universal appliance. Lingual arches continue to be very useful, as do Hawley's retaining appliances. Stainless steel is now applied extensively in the form of coil springs, arch wires, and bands. Spot welding technique has been developed to permit its use by many orthodontists. In addition, precision impression materials and photographic records have been encouraged and widely accepted. Vulcanized rubber has been largely replaced by the methyl-methacrylates.

Ten years ago we were beginning to question our ability to make bone grow and to "develop the mandible forward." These phenomena are today doubted, if not repudiated. Passed into the discard, too, is the promiscuous routine of expanding deciduous dental arches on the predicatory formula of anticipated dimension requirements.

Treatment of anomalies of the Class II (Angle) classification has become much more rational, and quick relapse is less frequent. It was quite usual in the earlier decades to prepare the upper teeth for the "position of mechanical advantage." This was followed by application of intermaxillary pressure divided equally between the entire maxillary and mandibular dental arches. Not many seemed to know precisely what was being attempted, although, generally, it was considered that the mandible was being made to "grow forward."

That there has been a definite alteration in our concept of Class II (Angle) is clearly demonstrated by the published case reports of recent years. Apparently, many practitioners have adopted the thesis that in these anomalies the maxillary teeth are too far forward. Accordingly, their initial steps in mechanical therapy include posterior movement of the upper molar teeth. Recently the influence of Tweed has focused attention upon the placement of mandibular anterior teeth as an added vital aspect of the problem.

From striving unsuccessfully to obtain forward growth of the mandible by means of intermaxillary elastics and bite planes, orthodontics switched its attention to moving mandibular teeth mesially. This altered objective is still rather widely practiced but it is assuredly giving way to the doctrine that most dentofacial anomalies, of the so-called distoclusion grouping, are actually protractions. By the very nature of the principle, this tenet must hold that in such abnormalities there is no need for change in the position of the mandible anteroposteriorly nor in its basic dimensions. Published photographs of patients so treated seem to support the proposition. If the future gives proof to the procedure, another change in nomenclature and classification may be expected.

Maxillary third molar teeth must be given careful consideration if anteversion is to be the diagnosis. Impaction or other damage is commonly a

certainty as a result of shifting the other maxillary molars distally. Consequently, extraction of the maxillary third molars is regarded frequently as a pretreatment requisite. Other operators favor surgical removal of the second permanent maxillary molars. The latter recourse is subject to objection.

It has become clear that posterior movement of the maxillary molars and premolars has a direct effect on the vertical relation as it applies to open and closed bite. Posterior movement of these molars seems to result uniformly in increased vertical dimension. This is, of course, desirable in Class II, Division 2 (Angle) and in Class II, Division 1 (Angle) where there is a closed bite issue. Some patients of the latter classification, however, have distinct open-bites, in which condition posterior movement of the maxillary molars would be disastrous. For this reason, operators prefer to let the mesial position of the maxillary molars remain, while resorting to extraction of the maxillary first premolars to permit reduction of the anterior teeth.

In the modern approach to malocclusions of the Class II, Division 1 (Angle) variety, there are many complicating factors of differential diagnosis. Dentofacial anomalies properly classified as Class II, Division 1 (Angle) sometimes appear as Class I (Angle) abnormalities due to the mesial position of mandibular teeth. In such occurrences, the teeth of the mandible are first guided into distoclusion, followed by posterior movement of the maxillary teeth.

Posterior movement of either maxillary or mandibular molars has long been a difficult accomplishment. Reliance upon the patient's will to cooperate is more often than not unsatisfactory. When it comes to moving mandibular molars in that direction, the factor of anchorage is paramount. Hence, in recent years there has been a revival of occipital anchorage by means of the skullcap for extraoral traction.

Thus, history has moved onward with its favorite child, Class II (Angle). *Practical Orthodontia*, by Dewey and Anderson, sixth edition, refers as follows to this abnormality: "Owing to the extreme facial deformity present in distoclusion with protruding maxillary anterior teeth, or Class II, Division 1, the orthodontic literature is full of such cases and their different plans of treatment. In fact, the advancement of orthodontics may be traced by the advancement of the technic in the treatment of this type of malocclusion."

Turning toward progress in other matters of interest to orthodontists, one must be impressed by the clarification of thought regarding dental caries.

There can be little doubt but that heretofore the public and even many members of the dental profession have maintained that orthodontic appliances caused decay of the teeth. In the light of current knowledge, there is much we can do to overcome this blight against our specialty.

For several years earnest practitioners of orthodontics have endeavored to meet the problem and to control the disease among their patients. As a basic principle the obvious need concerned knowledge of dental caries etiology. We had turned to the research workers for this information and had found there were nearly as many theories as workers. Fortunately, this is not so true today, thanks to additional research and the efforts of the Research Commission of the American Dental Association. We may now take logical precautions directed by rational application of fundamental principles.

During the year, 1939, the Research Commission of the American Dental Association managed to get most of the greater, and many of the smaller, workers on the subject of dental caries under one roof in a giant congress held in Chicago. The object was to allow exposition of the apparently varied and diversified summaries and conclusions relative to the disease.

Much good has come from the undertaking. Many of the scientists at this meeting learned that, after all, their findings coincided. This has allowed members of our profession to accept certain tenets of etiology as fundamental truths.

Thus, genetic background has been taken as a criterion for anticipated decay, allowing us to appraise the patient at hand. There has been greater acceptance of the bacteriologic differential and the effect of carbohydrates. Currently there are the fluorines.

Orthodontists now have something to work on. Before inserting appliances, they make radiographic studies for detection of cavities. All teeth on which bands are cemented are thoroughly cleaned beforehand. Bands are made tight enough so that stresses on the cement are minimized. Adjacent tooth parts in direct contact with band surfaces are carefully checked during the term of appliance wearing, for these areas seem to be particularly vulnerable to the disease. Periodic examination by means of bite-wing x-ray films, together with constant advising with respect to carbohydrate intake and hygiene are necessary.

It has become accepted as reasonable practice by many family dentists to postpone filling of beginning interproximal cavities which have not, as yet, involved the dentine of molar and premolar teeth. Temporarily, a precipitation of silver nitrate is applied to these lesions by dentists of this faith. If the orthodontist is not careful, these cavities may be lost track of in future months, and all blame may be assigned to him for their subsequent appearance in a more highly developed state. Thus, a complete record should be made of any and all open carious areas at the beginning of orthodontic treatment. Moreover, a reminder for a recheck of such areas should be placed in one's recall or observation file for a few months hence. In this way we may avoid considerable trouble and embarrassment. Years of coping with tooth decay are now yielding viewpoints and routines that give much encouragement.

The bewildering fact of root resorption is likewise a cloud through which a ray of enlightenment has penetrated. Beginning with Albert Ketcham, who impressed this problem on us in 1927, there has been a succession of investigators contributing to our information. Marshall, Schwartz, Oppenheim, Grubrich, and Gottlieb are included among them from their studies on both man and laboratory animals. The appearance on the scene of Dr. Hermann Becks, however, marks the most significant advances of recent years. It is from him that we have gained most of our current understanding of this problem. The aggregate findings of those named, and others, direct the following conclusions.

Resorption may occur on teeth either from the interior or the exterior. By this it is meant that the disappearance of tooth structure may go from the pulp canal outward or from the paradentium.

Internal resorptions have been reported in the literature by Mummery, Eggnatz, and Fastlicht. The instance of the "pink spot" observed in lateral incisor crowns is typical. In these teeth there was a dissolution of the dentine, and expansion of the pulp canal so extensive that its color showed through the enamel.

External resorption is the more usual type and may involve dissolution of the cementum laterally or apically. In the former case the roots may become thin and spindlelike. With the latter they are shortened and clublike.

The extent of apical resorptions may be all the way from mild to total. For purposes of description Becks has arranged a classification of the range according to degree. He divided the root surface into three parts. Mild resorptions involving the apical third of the root, are classified as "first degree resorptions." Those which include the middle third as well are "second degree resorptions." If the process has continued beyond this, it is a "third degree resorption."

It was Albert Ketcham who alarmed orthodontics by stating that 21 per cent of his patients had root resorptions. Other practitioners have since come forward with the belief that the ratio was even higher in their practices. In spite of this, there are many orthodontists who disclaim any such prevalence among their patients. Those who look so disdainfully upon this occurrence frequently imply there is a stigma attached to such a result. One might wonder, with forgiveness, if the authors of this opinion have looked hard enough in their own offices. There is some doubt that even the benefits of the past decade would support the statement by John V. Mershon, "Root resorptions and devitalization of teeth, as a result of orthodontic treatment, can be and should be nonexistent."

In contrast to those who deny any important frequency of root resorptions is the viewpoint of Oppenheim that one must always expect changes in the bone, cementum, and pulp when mechanical orthodontic therapy is applied. Further, among twenty-six selected patients who had been under orthodontic treatment from one to four years, Becks found only five with no changes in the root surfaces at the end of the first six months of treatment. Eighteen had first degree resorptions and three patients had second degree resorptions. "At the completion of the treatment, i.e., at the end of from one to four years, the frequency of root resorption became greatly increased: eighteen had first (one of which had also second degree resorption, No. 21), eight had second (one of which had also third degree of resorption, No. 9), one had a third degree resorption, and one patient had all his roots intact. In other words, the frequency of resorption increased 23.12 per cent after the first six months of active tooth movement to the time of completion of the work and the surprisingly high figure of 96.2 per cent of all individuals treated orthodontically from one to four years developed root resorption."

Still another clue has been written about by Samuel Fastlicht on the work of Rudolf, quoted by Thoma. Fastlicht says, "In 439 orthodontic patients he found that in the first year 48.74 per cent showed root resorption, and that in the second year this percentage increased to 74.63 per cent."

It seems, therefore, that orthodontics of the present era has sufficient data to indicate that root resorption is a frequent treatment complication, and that the truth of this fact should be admitted by everyone.

It is well established, of course, that not all root resorptions occur along with orthodontic treatment. Becks' study of one group of seventy-two patients before and after orthodontic treatment showed root resorptions in 32 per cent of them before treatment. There appears to be more involved etiologically than mechanical pressure.

Classification, relative to cause, is another contribution to the knowledge of external root resorption by Becks. He lists four types, three of which are exogenous forms. The remaining one he calls the endogenous form. Exogenous forms include atrophy of root substance from (a) inflammatory processes in the paradentium; (b) trauma, functional stress, and pressure; (c) inactivity, as in the extrusion of a maxillary tooth into a void in the mandibular teeth.

Endogenous forms have a background of systemic disease, the exact nature of which is not completely known except that the disease influences bone metabolism. Endocrine disturbances have a high frequency among endogenous forms. Hypothyroidism is common. Low basal metabolic rates and osteoporotic bone structure have been observed by Becks in large numbers of these root resorptions. He suggests that these systemic conditions either cause or accelerate the resorption seen during orthodontic treatment.

Prognosis of first degree root resorptions is good, according to Becks. Gottlieb would give such cases a rest. Second degree resorptions, especially when they are accompanied by alveolar bone resorption, must be regarded with concern. Third degree resorptions have unfavorable probabilities.

Thus, the works of the last ten years have given orthodontics another aid to a bothersome aspect of practice. As with dental caries, we now have some means to help control root resorption. The complete answer is not yet within sight, but we may look ahead with hope and assurance.

That the foregoing does not entirely cover orthodontics' last decade of progress is obvious. There have been studies on correct time for orthodontic treatment, which promise to alter our concepts in the years that are to come, and on the problem of retention, which the next decade may find to be largely unnecessary. These and many other advancements stand well to be included in such a review as this. Orthodontists have been heard to ask disparagingly, "What have we accomplished in the last ten years?" "Much," one might answer. Is not firmer ground forming under our feet? A clarification of issues has occurred during the last ten years to characterize the decade.

REFERENCES

Dewey, Martin, revised by Anderson, George M.: Practical Orthodontia, ed. 6, St. Louis, 1942, The C. V. Mosby Co.

McCoy, James D.: Applied Orthodontics, ed. 5, Philadelphia, 1941, Lea & Febiger.

Idem: A Contribution to the Symposium, AM. J. ORTHODONTICS AND ORAL SURG. 28: 671, 1942.

American Dental Association: Dental Caries, Compiled for the Research Commission by the Advisory Committee on Research in Dental Caries, Lancaster, 1939, Lancaster Press, Inc.

Berger, H.: Idiopathic Root Resorption? AM. J. ORTHODONTICS AND ORAL SURG. 29: 548, 1943.

Greenstein, A. V.: The Tweed Philosophy, AM. J. ORTHODONTICS AND ORAL SURG. 29: 527, 1943.
Gottlieb, Bernhard: Some Histologic Facts Useful in Orthodontic Practice, AM. J. ORTHODONTICS AND ORAL SURG. 28: 167, 1942.
Johnson, Jos. E.: The Treatment of a Class II, Division 1 Case Using the Twin Wire Mechanism, AM. J. ORTHODONTICS AND ORAL SURG. 28: 721, 1942.
Eggnatz, Meyer: Case Report of Internal Resorption, AM. J. ORTHODONTICS AND ORAL SURG. 25: 166, 1939.
Fastlicht, Samuel: Root Resorption, AM. J. ORTHODONTICS AND ORAL SURG. 28: 548, 1942.
Oppenheim, Albin: Biologic Orthodontic Therapy and Reality, The Angle Orthodontist 5: 3; 6: 3, 1936.
Mershon, John V.: Orthodontic Facts Versus Fallacies, AM. J. ORTHODONTICS AND ORAL SURG. 28: 475, 1942.
Hellman, Milo J.: Some Biologic Aspects: Their Implications and Application in Orthodontic Practice, INT. J. ORTHODONTIA 23: 761, 1937.
Becks, Hermann: Orthodontic Prognosis: Evaluation of Routine Dentomedical Examinations to Determine "Good and Poor Risks," AM. J. ORTHODONTICS AND ORAL SURG. 25: 610, 1939.
Idem: Root Resorptions and Their Relation to Pathologic Bone Formation, AM. J. ORTHODONTICS AND ORAL SURG. 28: 513, 1942.

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Editorial

"Is Orthodontia a Science?"

If you should discuss the art of dry fly fishing with a real dyed-in-the-wool purist fisherman, and in the course of the conversation you should use the word "fishing pole" instead of fishing rod, you would inadvertently but promptly identify yourself without saying another word as a "bent pin fisherman" in the eyes of the Izaak Walton enthusiast.

In an editorial which appeared in *Dental Items of Interest,* December, 1944, entitled, "Is Orthodontia a Science?" no bouquets were thrown in the path of the specialty of orthodontics, and in using the appellation "purists" orthodontists were subjected to some "now it can be told" type of jeering. On account of the obvious "bent pin" concept, however, of the writer of the overall orthodontic picture, the editorial quickly lost its impressiveness; nonetheless it is interesting particularly to those who spend their lives in the treatment of malocclusion.

It was enlightening, for instance, to read that from a "treatment standpoint orthodontia is just where it was fifty years ago." The impression was given that orthodontics is about finished, and that general practitioners, in the past, by extracting teeth in treatment, have made more progress in a practical way, with less ostentation and fanfare, than have the orthodontists. Along with liberal quotations from papers read as part of the Extraction Panel in Chicago, last April, there appeared a paragraph that revealed that orthodontists cannot produce 20 per cent of perfectly finished results, or words to that effect at least.

In any event, the effort of the editorial was plainly to deflate orthodontics as a specialty. Most of the limitations which were laid at the feet of orthodontics were charged to bewildering uncertainty, contention, and dispute among some of its workers, mostly over the age-old question of the extraction of teeth as an aid to the correction of malocclusion. Fortunately, however, things are not nearly as bad as portrayed, and plainly the editorial was inspired by the reading of the Panel Issue of the Journal, August, 1944. This issue was devoted exclusively to the subject of the extraction of teeth as an aid to the correction of malocclusion.

Writers of scientific manuscripts well know the familiar trick often used by politicians and others by which an adversary carefully dissects an opponent's speech. By quotation and segregation of significant paragraphs, he is able to make the quotations of his opponent look silly using the paradoxical inference that "it doesn't make sense."

Many times that technique is used in the same spirit that is manifested by the small boy who pokes a stick between the chair panels and contacts the anatomy of the boy in the seat ahead of him. He wants to see him jump.

It can be admitted that the observation on 20 per cent success referred to above might cause a raising of the eyebrows by those not too familiar with orthodontics past and present; however, the point is not made that the literal translation of the 20 per cent idea plainly means that, in one man's opinion at least, orthodontics, in order to rate above the 20 per cent alleged success referred to, *must realize the ideal instead of idealizing the real.* It is obvious to the experienced specialist that even the 20 per cent perfection is still too high an appraisal. To say that perfection only is successful treatment in the correction of malocclusion is a will-o'-the-wisp, as in any biologic treatment, and is much like saying that plastic surgery is a failure because a very small percentage of the results are perfect. There have been many satisfactory orthodontic results secured that served a very practical purpose to the patient and afforded a spectacular improvement in the facial and esthetic appearance.

Students of the history of the specialty know that the orthodontic branch of dentistry was discredited and nearly wrecked at a period during the latter half of the last century by what might be called a ruthless extraction inflation. It came in recommended as an aid to the correction of so-called "crooked teeth" but went out as a "cure-all" responsible for many ruined mouths. In many instances, extraction was done with little orthodontic guidance whatsoever by the operator who depended only on a hunch as to what might happen several years subsequent to the extraction.

There is much more to the background of the extraction controversy than appears in the official transactions of the American Association of Orthodontists or what appears under the caption of scientific procedure. The "old timers" knew that extraction is much like inflation of money, in that a little of it may be good but it is very likely to "go off the deep end" unless controlled and directed by operators who know exactly what they are doing.

S. H. Guilford, A.M., PhD., D.D.S., University of Pennsylvania, wrote as follows on this subject during the last century (1889), and its hazards were obviously well understood by the leaders even at that early date.*

"Probably no feature in the practice of orthodontia is more important, or has associated with it greater possibilities for good or evil to the patient, than that of extraction."

To get back to the proposition as to what may be regarded as successful orthodontic treatment versus what may be thought to be failure, nothing has been said about the highly important item of the risk of failure created by the lack of cooperation on the part of the patient.

Cooperation of the patient is as important to the quality of end result attained as is the ability and skill of the operator. There are some patients who rate an A+ in cooperation and there are others who rate F. With the latter, no human being can get a result, whether he be the so-called "purist" referred to in the editorial or the "catch-as-catch-can" type of operator who relies on no particular plan of treatment other than that provided by a limited orthodontic instruction in his college curriculum.

Orthodontics as a specialty needs no defense. It is amply able to stand on its own record. It is time, however, to discontinue the practice of making a

*Guilford, S. H.: Orthodontia, Philadelphia, 1889, Spangler & Davis.

"whipping boy" out of the entire specialty because of shifting opinion in regard to some phase of practice. Its workers, specialists particularly, are realizing that controversies must be tempered with common sense if the greatest good is to be accomplished for this department of dentistry.

Let no man tell you directly or by intimation that orthodontics is insecure. Few specialties can equal its record of accomplishment during the past fifty years; none can match its record of rich recorded scientific literature. With all its caprices and its phobias, however, it has always enjoyed behind its progress one of the most indefatigable and enthusiastic group of workers in all dentistry. It was Longfellow who said, "The strength of criticism is only in the weakness of the thing criticized."

Review the best orthodontic literature of the latter half of the preceding century and you will find that dentists were extracting premolars, lateral incisors, and canines without inhibition as an aid in the correction of malocclusion. It required a number of years for a few of the so-called pioneer "purists" to break that practice. That is one of the important reasons why orthodontists are panicky about the subject of the extraction of teeth. They are much like the child whose fingers have been burned; they know what can happen if the basic training of the dental profession includes the doctrine that much of the cure for malocclusion is the extraction of normal dental units.

H. C. P.

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Col. Richard F. Thompson
Col. L. B. Wright

There may be members in the Service whose names do not appear in the above list. These members should notify the secretary at once so that their names may be included.

Max E. Ernst, Secretary, American Association of Orthodontists, 1250 Lowry Medical Arts Bldg., St. Paul, Minn.

In Memoriam

WILLIAM A. McCARTER

Another one of the men who founded the specialty of orthodontics early in this century has passed on to his reward.

Dr. William A. McCarter passed away at the home of his daughter, Mrs. Charles Baker, of Tulsa, Oklahoma, where he had retired because of ill health four years ago.

He was born on Dec. 1, 1858, in Whitley County, Indiana. He was the son of Mary Jane Perry and Arthur Chambers McCarter.

In May of 1883, he entered the dental office of Dr. T. A. Goodwin of Warsaw, Indiana, as an apprentice. Two years later he came west and entered the Kansas City Dental College, and in March, 1887, received his degree of Doctor of Dental Surgery.

He located in Topeka, Kansas, and three years later married Margaret Hill. In the years that followed these two became well known and well loved, Dr. McCarter in his chosen field and Mrs. McCarter as one of Kansas' outstanding authors. In 1913 "Dr. Mac," as he was affectionately known, took a postgraduate course in the Dewey School of Orthodontia and from then on limited his practice to that specialty.

His illness brought to a close a dental practice of nearly fifty years in Topeka, over half of which was in the field of orthodontics. He took an active interest in civic projects. Although seldom a leader, his enthusiasm brought success to many ventures that otherwise might not have matured. He was among the little group that started the first golf club in Topeka. His persistent effort contributed to the forming of a school dental clinic and yearly examinations. He was a charter member of the Topeka Dental Society, of which he was a former president, a member of the Methodist church, a Mason, a Rotarian, a Delta Sigma Delta, and member of the American Society of Orthodontists. He was a member and president of the First District Dental Society of Kansas, and was also a member of the American Dental Association.

He leaves three children, Mrs. John R. Dean, Mrs. Charles L. Baker, and William Hill McCarter, director of Athletics at Dartmouth College, Hanover, New Hampshire.

Department of Orthodontic Abstracts and Reviews

Edited by

DR. J. A. SALZMANN, NEW YORK CITY

All communications concerning further information about abstracted material and the acceptance of articles or books for consideration in this department should be addressed to Dr. J. A. Salzmann, 654 Madison Avenue, New York City

An Unusual Case of Malocclusion. By McC. Wilson, Dental School, *New Zealand D. J.* **40**: 19-20, January, 1944.

Case History.—The patient is a New Zealand-born male child, aged 12 years, of normal healthy appearance. The middle and upper thirds of the face are of normal proportions, but the lower third is very narrow with a pointed chin.

One of the most noticeable features seen on examination of the mouth was the small pointed tongue, a condition which had existed from birth, as great difficulty was experienced in breast-feeding him as he was unable to suck in a normal manner.

The mother was quite healthy during the period of pregnancy, which was of normal duration, and the child has not suffered from any serious illnesses. The deformity is apparently hereditary, as both the mother and her father have a similar defect, although the patient's elder brother has a normally developed mandible.

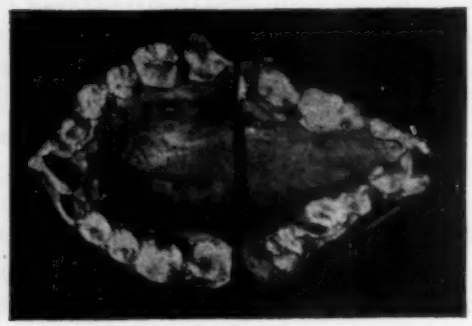

Fig. 1.—Maxilla and mandible.

Fig. 2.—Side view.

Considering the case in more detail, there is only one lower incisor present, the other three having been extracted soon after eruption owing to their displaced position and extreme looseness.

The mandibular molars and premolars are all in lingual occlusion to their upper antagonists, there being an entire absence of cuspal contact.

Classification.—Mutilated Class I with lower molars and premolars in linguoversion.

Etiology.—1. The inherited and congenital underdevelopment of the tongue is the predominating factor. The mandible is developed between two sets of constantly acting muscular forces, viz., the cheek muscles and those of the tongue, and for the mandible to develop normally they must be acting in har-

mony. In this case they are not, the cheek and lip being the predominant forces, and they have restricted the lateral growth of the mandible.

2. The difficulty the child experienced in sucking, owing to the smallness of the tongue, would retard the lateral development of the mandible; for, according to Pickerill, this process plays an important part in the development of this structure.

3. The nonocclusion on the posterior teeth is another factor causing lack of mandibular development, as the influence of the inclined planes of the cusps of the teeth during mastication is entirely absent.

Treatment and Prognosis.—There seems to be very little that can be done to correct this unfortunate condition. Instruction has been given in tongue exercises, and if these are religiously adhered to, a certain amount of expansion may occur and thus make the task of the prosthetist easier when time comes for the lower denture to be worn.

News and Notes

The New York Institute of Clinical Oral Pathology, Inc.

An open meeting of the New York Institute of Clinical Oral Pathology will take place at the New York Academy of Medicine, 2 East 103rd Street, New York City, on Monday evening, April 30, 1945, at 8:15 P.M.

There will be a symposium entitled, "A Survey of the Antibiotic Problem."

The following outstanding investigators will participate: Daniel Laszlo, M.D., Mt. Sinai Hospital, New York, N. Y., "The Role of Biotics and Antibiotics in Chemotherapy." Frank Lamont Meleney, M.D., Associate Professor of Clinical Surgery, College of Physicians and Surgeons, Columbia University, and Director of Laboratory of Surgical Bacteriological Research, "The Problem of Penicillin in Treatment of Mixed Infections." Leo Stern, D.D.S., Mt. Sinai Hospital, New York, N. Y., "The Treatment of Acute and Chronic Infections of the Jaws With Antibiotics." Lt. Col. Kenneth M. Kahn, M.C., A.U.S., Chief of Section for Otolaryngology, Halloran General Hospital, Staten Island, New York, "The Relative Value of Antibiotics in the Treatment of Otolaryngic Diseases." Louis I. Grossman, D.D.S., Associate in Oral Medicine, and Head of Root Therapy Clinic, "Evaluation of Antibiotic Agents for Root Canal Treatment." Ludwig von Sallmann, M.D., Department of Ophthalmology of the College of Physicians and Surgeons, Columbia University, N. Y., "The Role of Iontophoresis in Ocular Therapy With Antibiotics." Alvin E. Strock, Senior Assistant Dental Surgeon (R), U. S. Public Health Service Hospital, Manhattan Beach, Brooklyn, N. Y., "Treatment of Ulcerative Stomatitis (Vincent's Infection) With Penicillin."

For further information address all communications to the Executive Secretary, 101 East 79th Street, New York 21.

American Dental Association

The American Dental Association's President, Dr. Walter H. Scherer, the Board of Trustees, and the Council on Dental Education are opposed to any form of student quotas in dental colleges. This was made clear at regular meetings of the Board of Trustees and the Council on Dental Education held in the American Dental Association's headquarters in Chicago, Feb. 9 and 10, 1945.

Statements clarifying their stand were issued after an article by Dr. Harlan H. Horner, Secretary of the Council on Dental Education, received widespread attention in the Nation's press.

Asociación Méxicana de Ortodoncia

In the general meeting of the Mexican Association of Orthodontics, with headquarters in Mexico, D. F., Mexico, Dec. 26, 1944, under the presidency of Dr. Carlos M. Paz, with Dr. Manuel Valderrama and Dr. Rutilio Blanco acting as Secretary and Treasurer, respectively, the election of the new Committee for the period 1945-1946 took place. The following officers were elected: President, Dr. Guillermo Gambo, Madero 34-3; Secretary, Dr. Rutilio Blanco, Donceles 98-209; Treasurer, Dr. Carlos M. Paz, Av. Insurgentes 72.

American Association of Orthodontists

The meeting of the American Association of Orthodontists, which was to have been held in Colorado Springs, May 21-24, 1945, has been cancelled.

MAX E. ERNST, Secretary, 1250 Lowry Medical Arts Building, St. Paul 2, Minnesota.

American Board of Orthodontics

The American Board of Orthodontics announces the cancellation of the meeting formerly scheduled for May 17, 18, 19, and 20, 1945, at the Broadmoor Hotel, Colorado Springs, Colorado.

Notice of the time and place of its next meeting will be given all applicants and those who are preparing material for examination by the Board. Orthodontists who may desire information relative to certification by the Board may address the Secretary, Dr. Bernard G. deVries, 705 Medical Arts Building, Minneapolis, Minnesota.

Bulletin of the Pacific Coast Society of Orthodontists

CENTRAL SECTION

The winter quarterly meeting of the Central Section was held at the Alexander Hamilton Hotel in San Francisco, Dec. 20, 1944.

The first speaker of the evening was Clarence W. Carey, who gave a brief résumé of the so-called "tooth positioner" as introduced by Dr. H. D. Kesling of La Porte, Indiana. Wendell I. Wylie and Clarence W. Carey each presented two cases that had been operated and then subjected to the mechanics of the "positioner." The group evidenced considerable interest in this new device and many questions were asked of the two demonstrators.

The second speaker was Thomas R. Sweet, substituting for J. Camp Dean who was unavoidably absent. He read the paper of Alexander Sved, of New York, on changing the occlusal level of the teeth. The paper was profusely illustrated by lantern slides and three of the acrylic bite plates were demonstrated.

The third speaker was Wendell I. Wylie, who discussed a recently published paper by L. M. Waugh, of New York, on the experimental depression of teeth. Dr. Wylie spoke with a keen knowledge of his subject and also presented slides and blackboard illustrations to augment his remarks. His discussion served to create feeling that much research must be carried on by many workers, each checking the results of the others, so that we may know better the results of the forces that are applied to the teeth that are being moved.

The fourth speaker was Will G. Sheffer, who presented in a sequential, pictorial, and dynamic style, the story of diagnosis, and presented for the first time a new instrument for cephalometric recordings according to the gnathostatic principles of Simon. Anyone who has heard Dr. Sheffer present his thoughts at any time knows well the interesting presentation that it was our pleasure to hear. Dr. Sheffer has presented many mechanical devices to the profession so that orthodontics may be more scientifically practiced and more adequate records may be kept, both written and photographic. This new instrument is a precision instrument easy to manipulate, which accurately records the various points on a gnathostatic model on a specially treated and marked paper.

SOUTHERN SECTION

The meeting of the Southern Section, held Oct. 12, 1944, was called to order at 7:30 P.M. by Chairman Jess Linn.

The Southern Section voted in favor of holding the Pacific Coast Conference meeting at San Francisco in February. Dr. Dallas McCauley, Chairman of Clinics for the Southern Section, asked for the cooperation of the membership so that the Southern Section would make a worthy presentation.

It was moved by Dr. Hays Nance that a committee be appointed to obtain the names of those in exclusive practice of orthodontics in order to invite them to attend our meetings. The motion was carried.

Dr. James D. McCoy gave a paper on "Dentofacial Growth Changes in Orthodontic Treatment," illustrated with lantern slides. The paper was very well received and was followed by a general discussion which showed the sincere appreciation of the membership.

The regular quarterly meeting of the Southern Section was held Dec. 8, 1944, at Chapman Park Hotel, Los Angeles, and was called to order at 8:00 P.M. by Chairman Jess Linn. The secretary read the minutes and they were approved.

The program was on the "Etiology of Dentofacial Anomalies." The discussion was divided in two parts, Dr. Ben Reese taking the clinical or the symptoms, and Dr. Dallas McCauley discussing predisposing causes.

SEYMOUR L. WINSLOW

The Central Section of the Pacific Coast Society of Orthodontists has received the sad news of the death of one of its esteemed and beloved members in Watsford, England, on November 14.

Major Seymour L. Winslow, 38 years old and a native of California, was a member of the class of 1930, University of California, College of Dentistry, graduating at the age of 21. He continued in a postgraduate course of instruction, after which he entered into the exclusive practice of orthodontics in Santa Rosa, California.

He later became a member of the Orthodontic Staff at the University of California, where he instructed the freshmen students in the technique of appliance construction and assisted in the clinical instruction of upper classmen, serving in this capacity until his call to the Service.

As an orthodontist, he was intensely interested in his work and was constantly striving to perfect and improve technical phases of appliance construction. Not confining himself entirely to techniques, he participated in several of the summer conference courses given at the University of Southern California, as well as finding time to visit several prominent orthodontists throughout the country.

He was a member of Xi Psi Phi fraternity, and a chairman of the Central Section of the Pacific Coast Society of Orthodontists. A leader in local public affairs, he held responsible positions in civic organizations. He was a sportsman, making frequent trips to his favorite club for duck hunting. In this regard he is particularly remembered by the Central Section, having once supplied the ducks for our December dinner meeting.

In addition to his parents and his widow, Margaret Winslow, he is survived by a 2-year-old son, Richard, whom he had never seen.

Current information relative to his period of service in England is meager, due to wartime restrictions. He possessed the rare trait of a spontaneous enthusiasm for his work, and his death is a regrettable loss to us personally and professionally.

RAY A. LUSSIER
GUY HUGHES

By action of the officers and directors of the Pacific Coast Society of Orthodontists, the meeting which had been scheduled for Feb. 20, 21, and 22, 1945, at the Palace Hotel in San Francisco, was cancelled.

Notes of Interest

The Board of Trustees of Meharry Medical College has announced the appointment of Dr. M. Don Clawson as President of Meharry Medical College, succeeding Dr. Edward L. Turner. The Board of Trustees has also announced the appointment of Dr. Murray C. Brown as Director of Medical Education.

Theodore S. Martin, D.D.S., announces his return to private practice from service in the Armed Forces. He is located at 1012 South Robertson Boulevard, Los Angeles, California. Practice limited to orthodontics.

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President, Max Abrams - - - - - - - - - - - 184 Shirley Ave., Revere, Mass.
Secretary-Treasurer, Edward I. Silver - - - - - - 80 Boylston St., Boston, Mass.

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*The Journal will make changes or additions to the above list when notified by the secretary-treasurer of the various societies. In the event societies desire more complete publication of the names of officers, this will be done upon receipt of the names from the secretary-treasurer.

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Secretary-Treasurer, William Kress - - - - - - - Medical Arts Bldg., Baltimore, Md.

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President, S. A. Riddett - - - - - - - - - - - 42 Harley St., London, W. 1, England
Secretary, R. Cutler - - - - - - - - - - 8 Lower Sloane St., London, S.W. 1, England
Treasurer, Harold Chapman - - - - - - 6 Upper Wimpole St., London, W. 1, England

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Sociedad Peruana de Ortodoncia

President, Augusto Taiman
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Secretary, Carlos Elbers
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Asociación Méxicana de Ortodoncia

President, Guillermo Gamboa - Madero 34-3
Secretary, Rutilio Blanco - Donceles 98-209
Treasurer, Carlos M. Paz - Av. Insurgentes 72

*The Journal will publish the names of the president and secretary-treasurer of foreign orthodontic societies if the information is sent direct to the editor, 8022 Forsythe, St. Louis 5, Mo., U. S. A.